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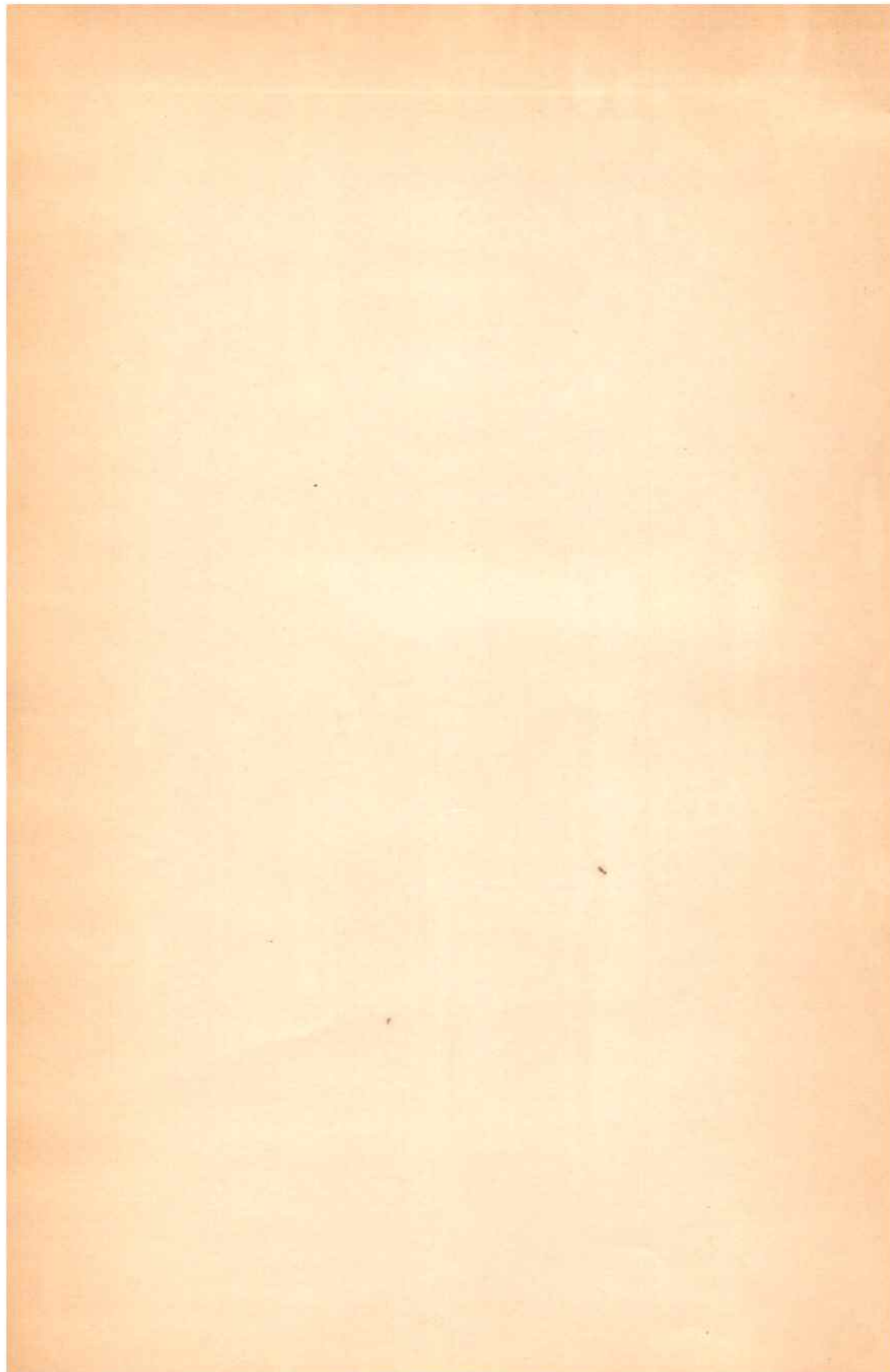
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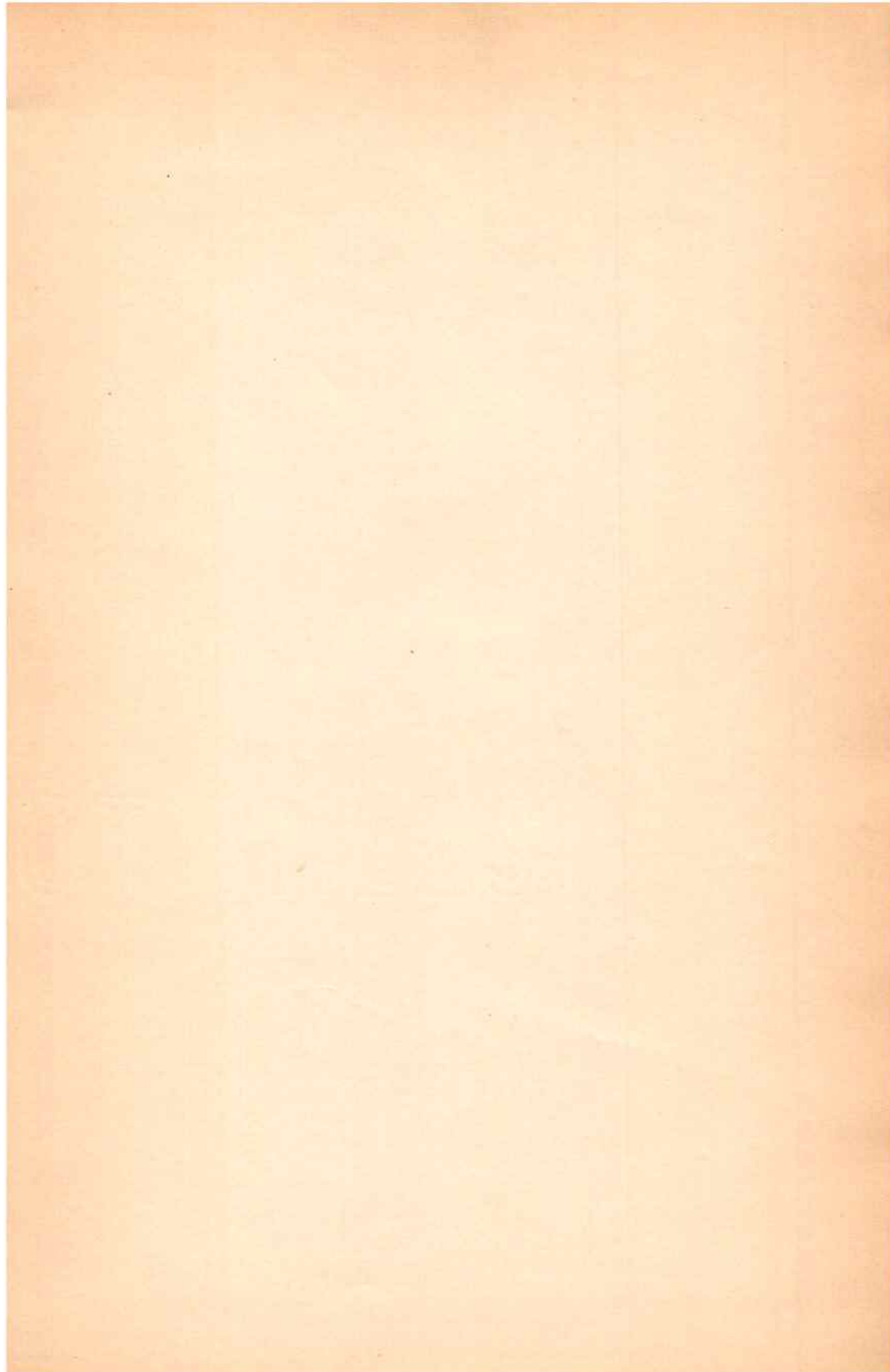
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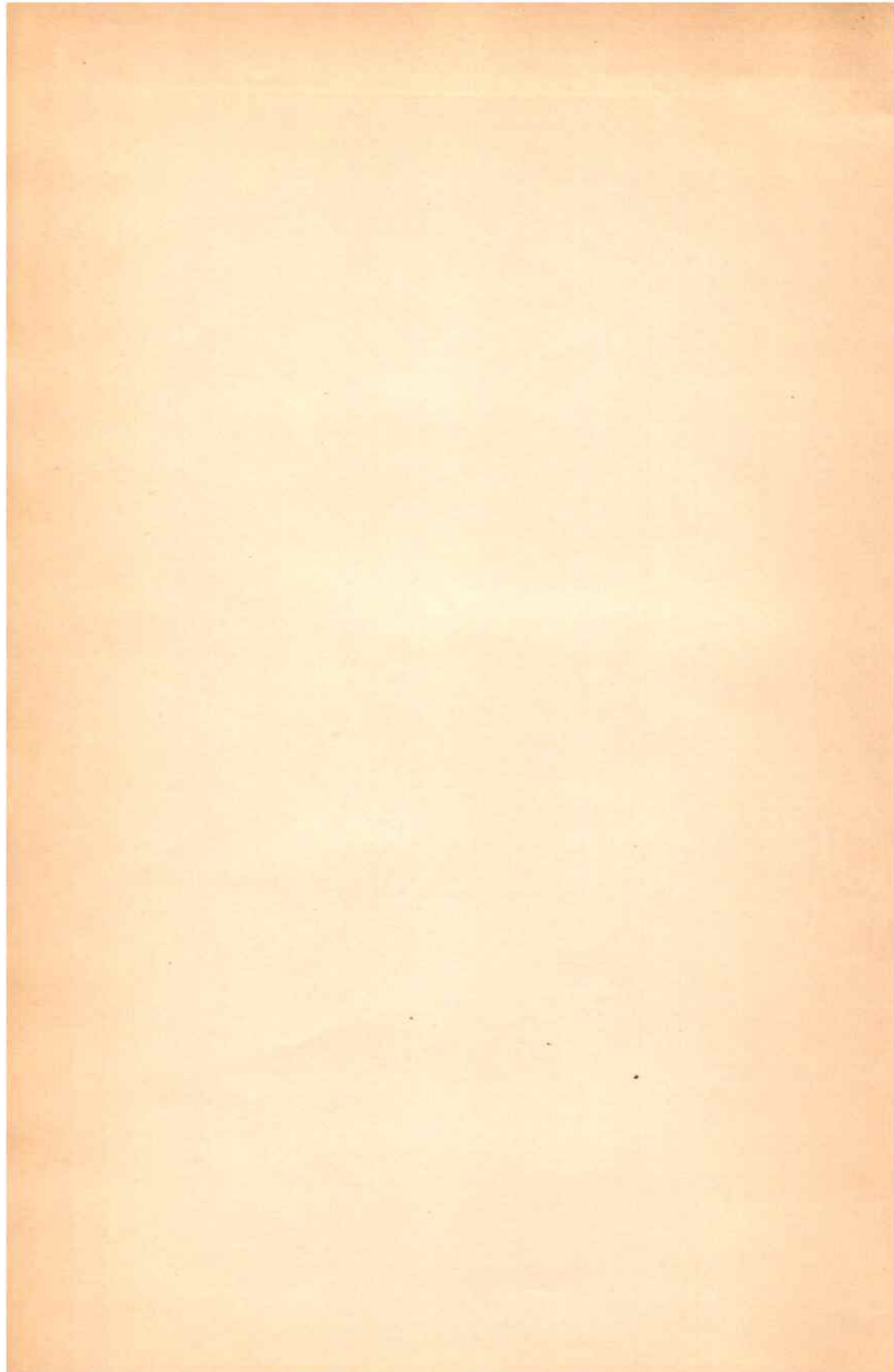
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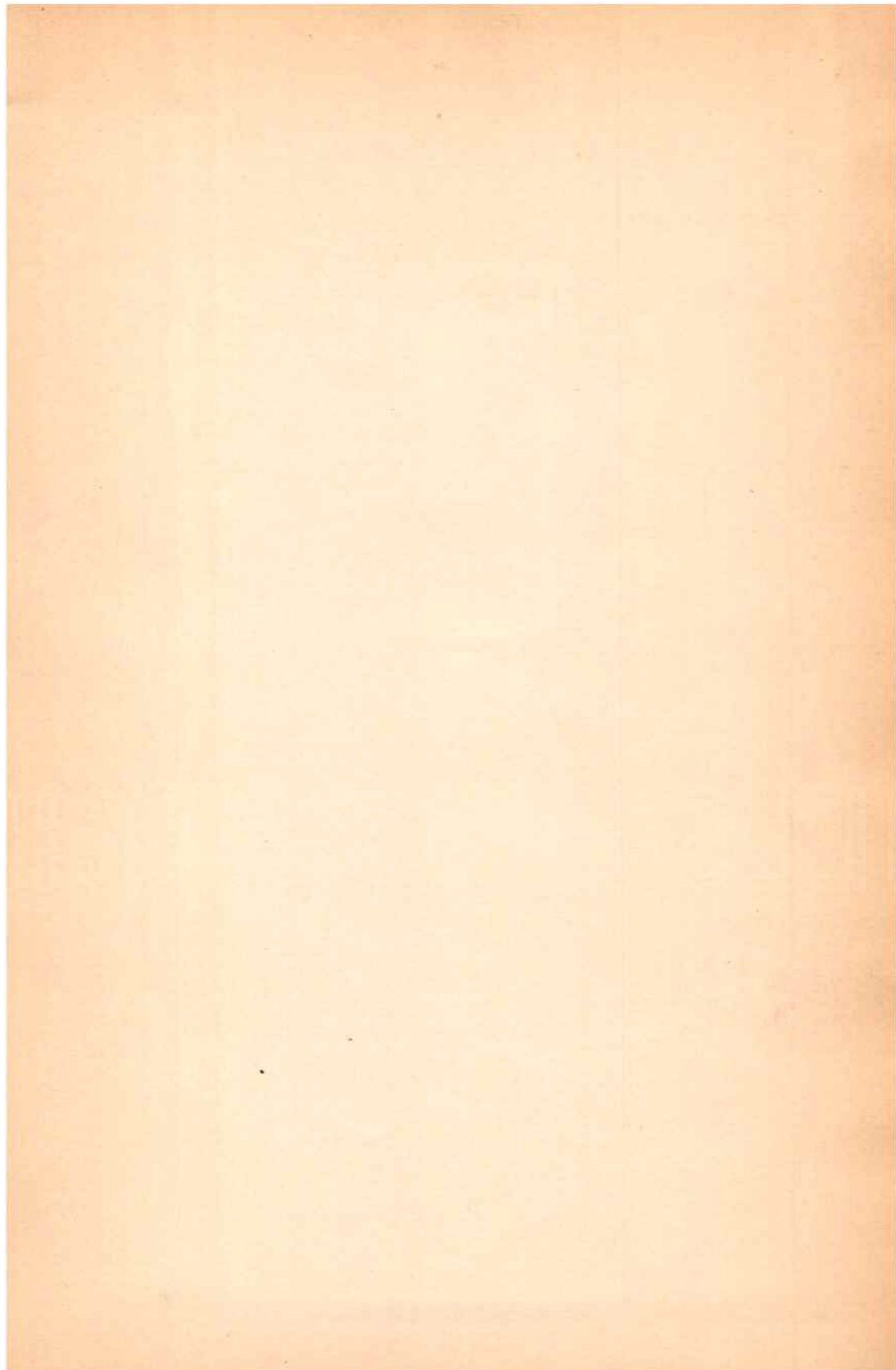
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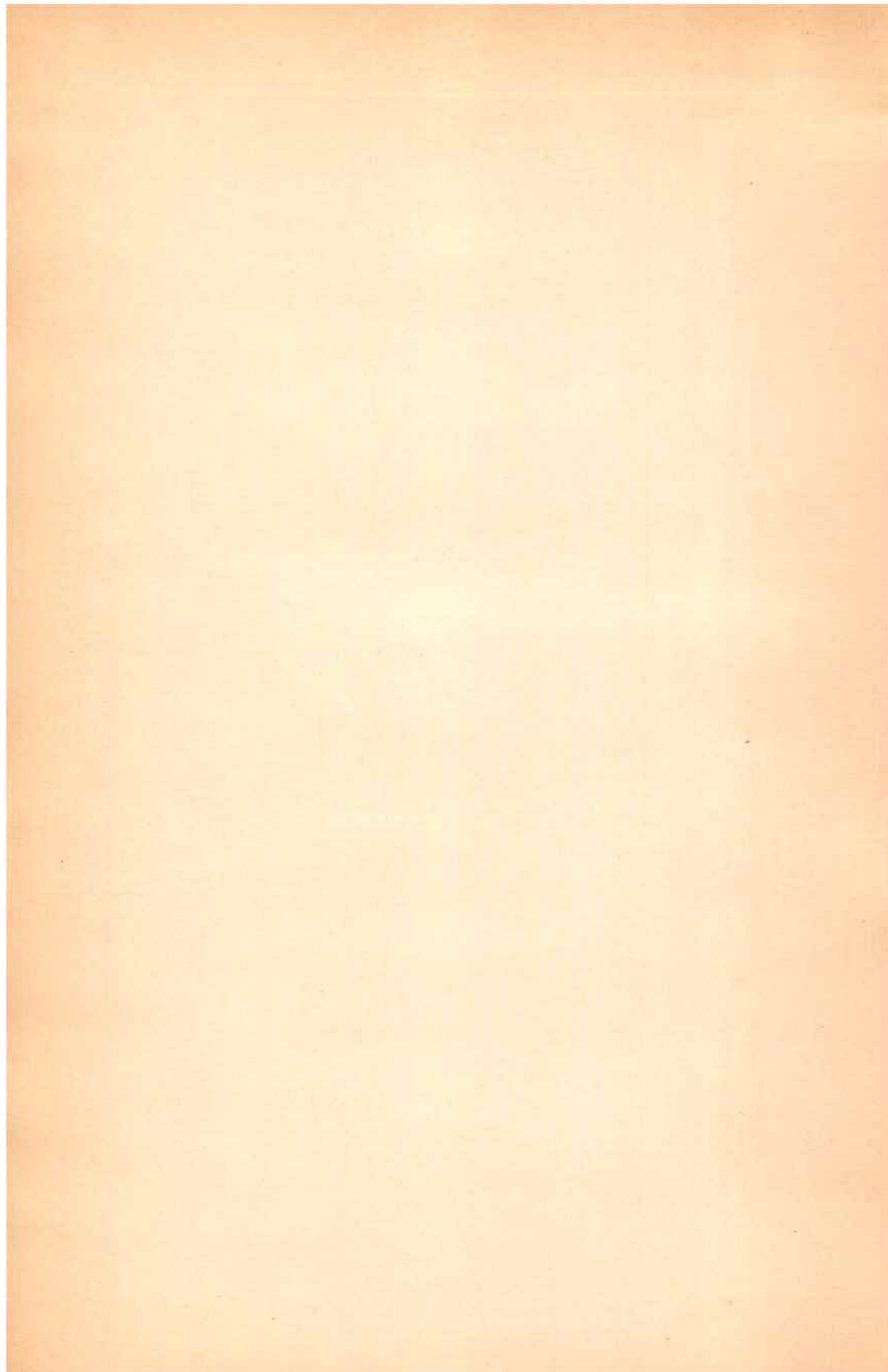




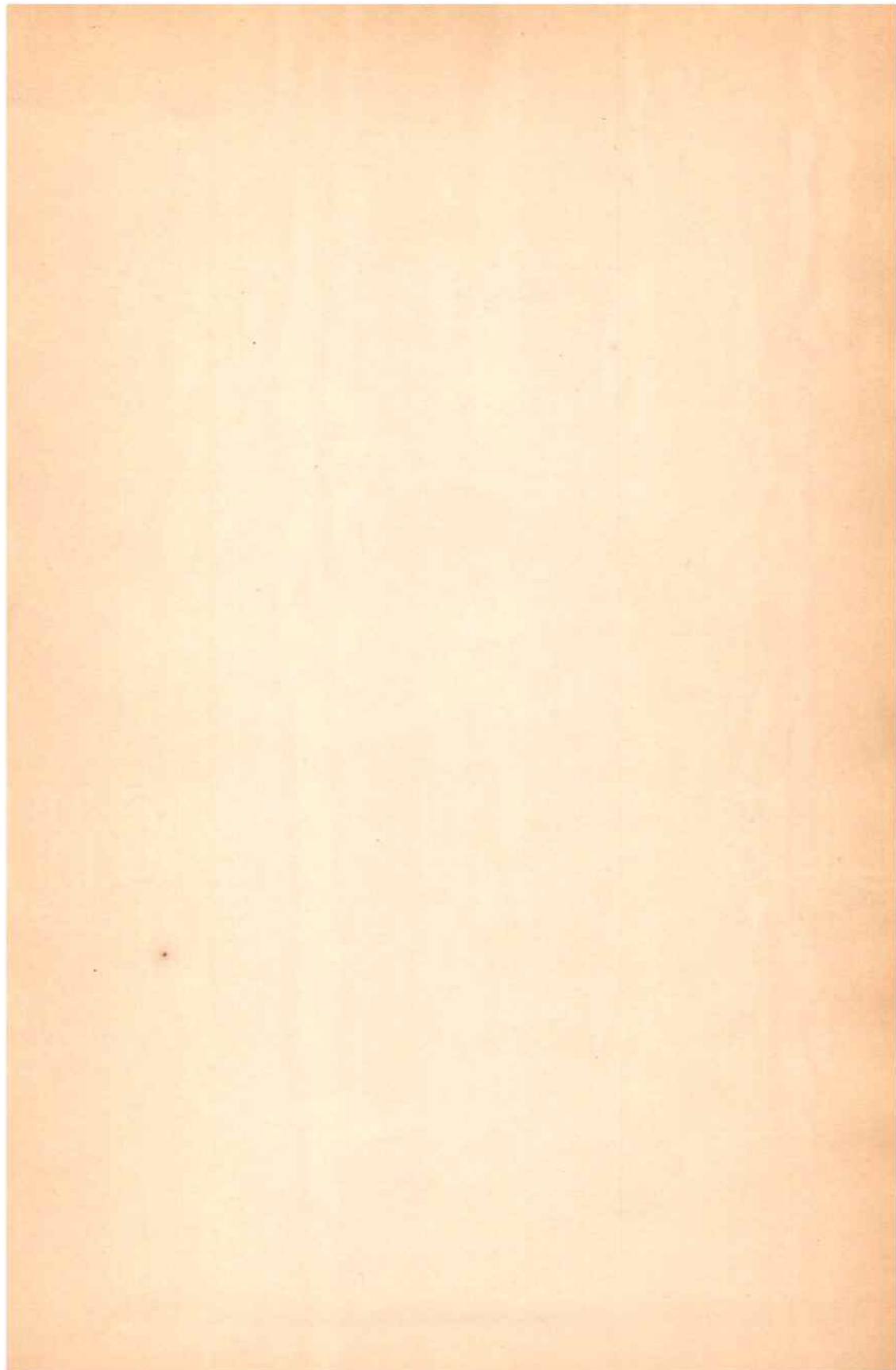


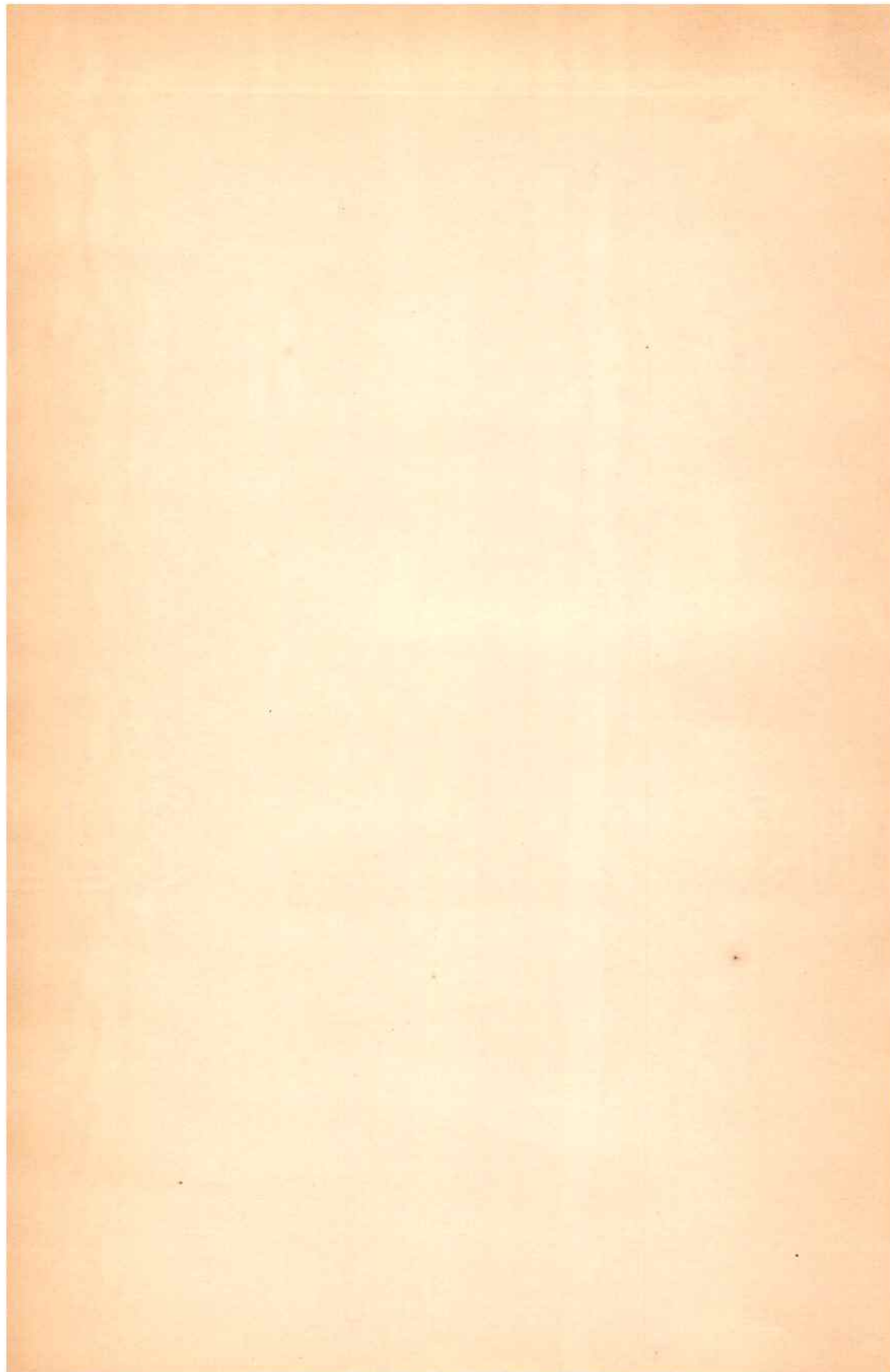


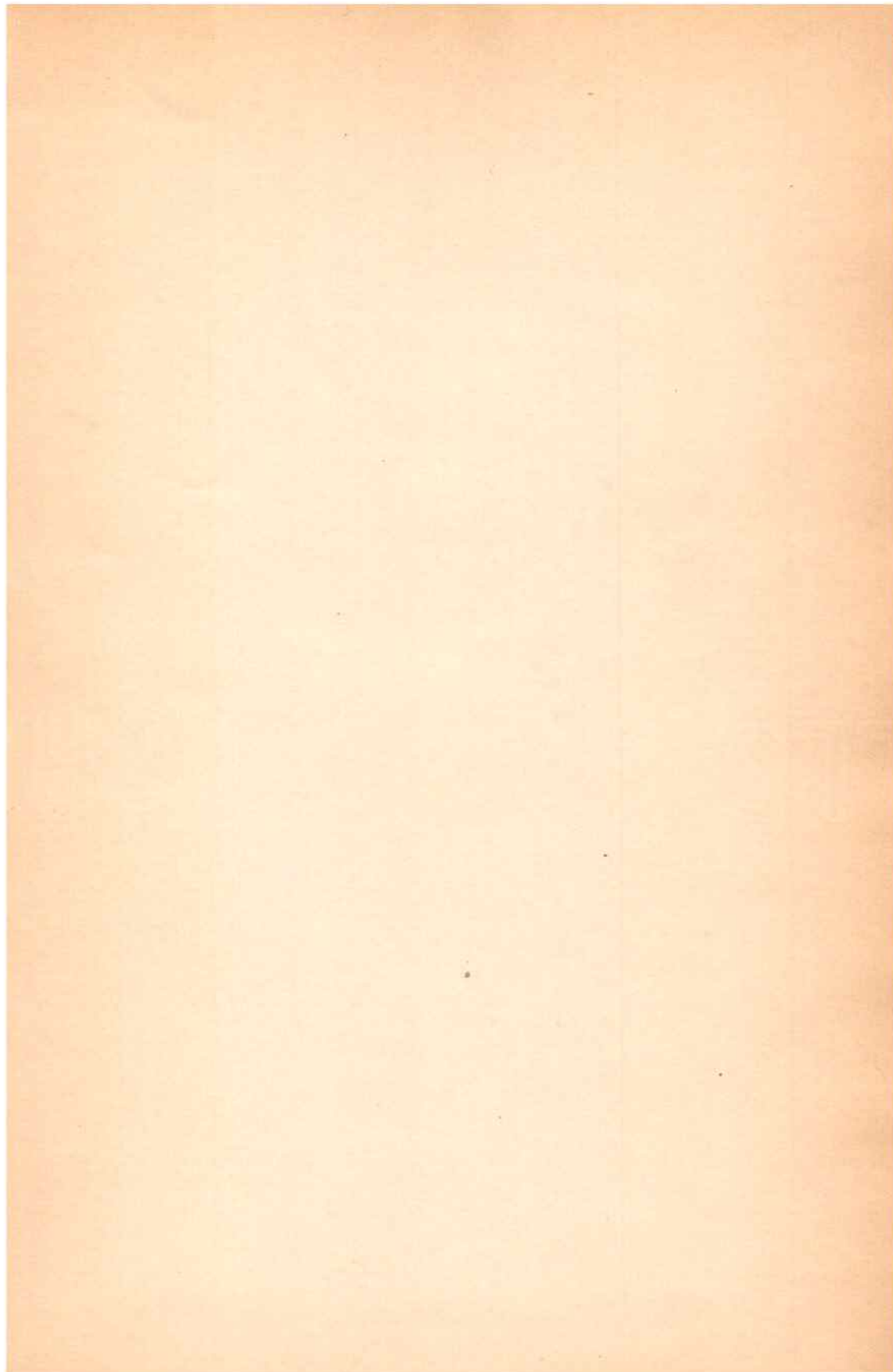




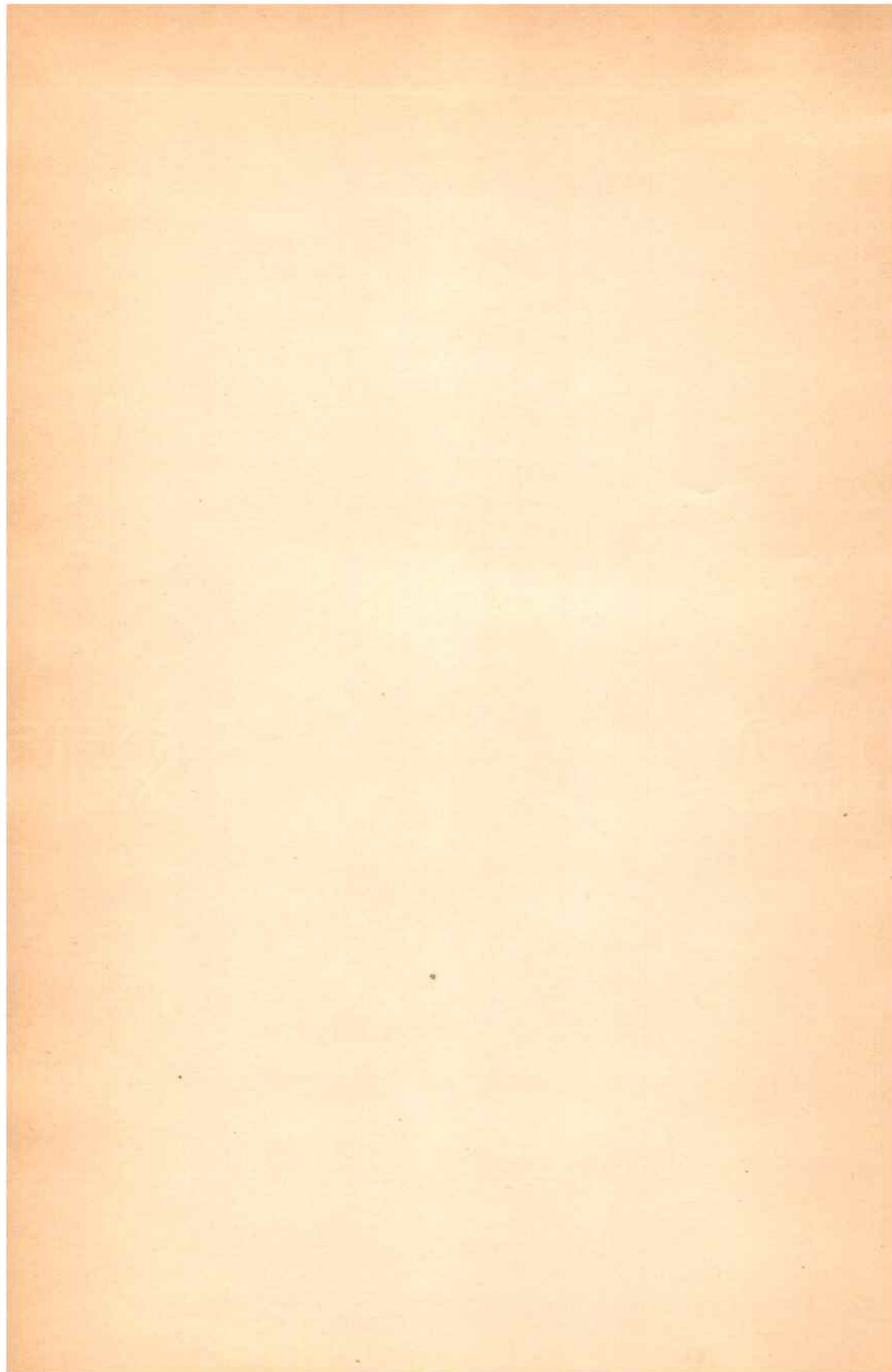


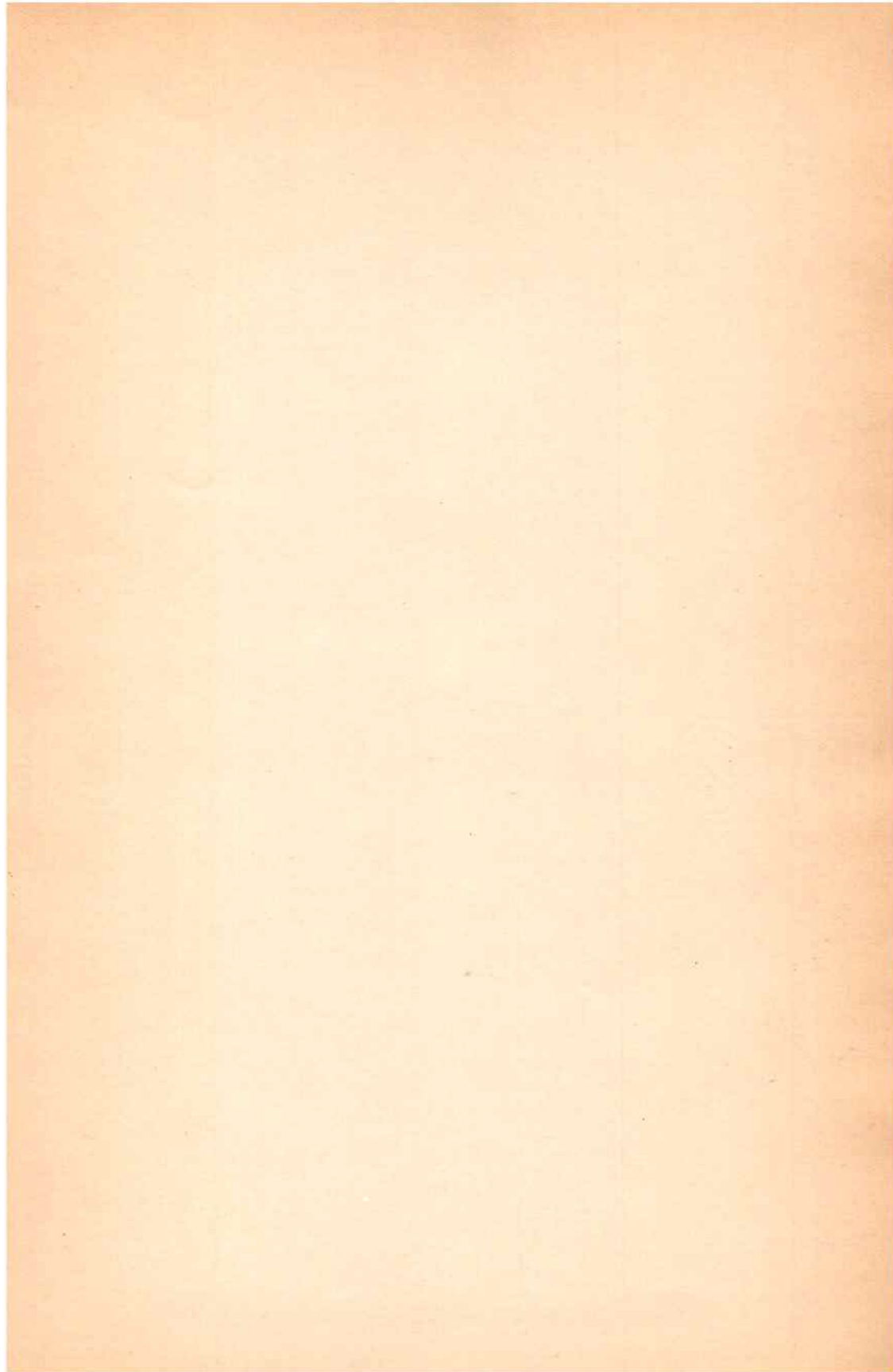


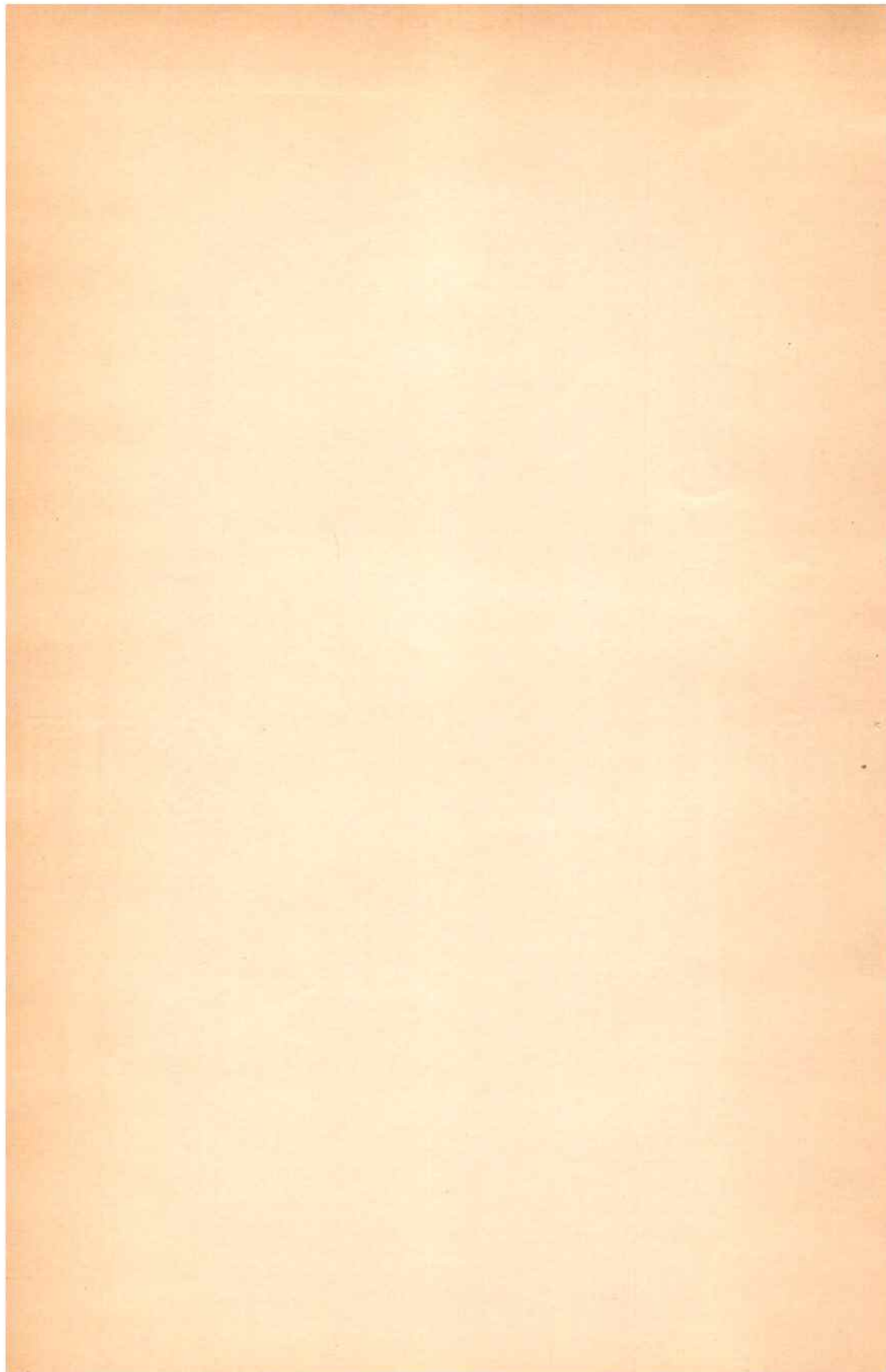


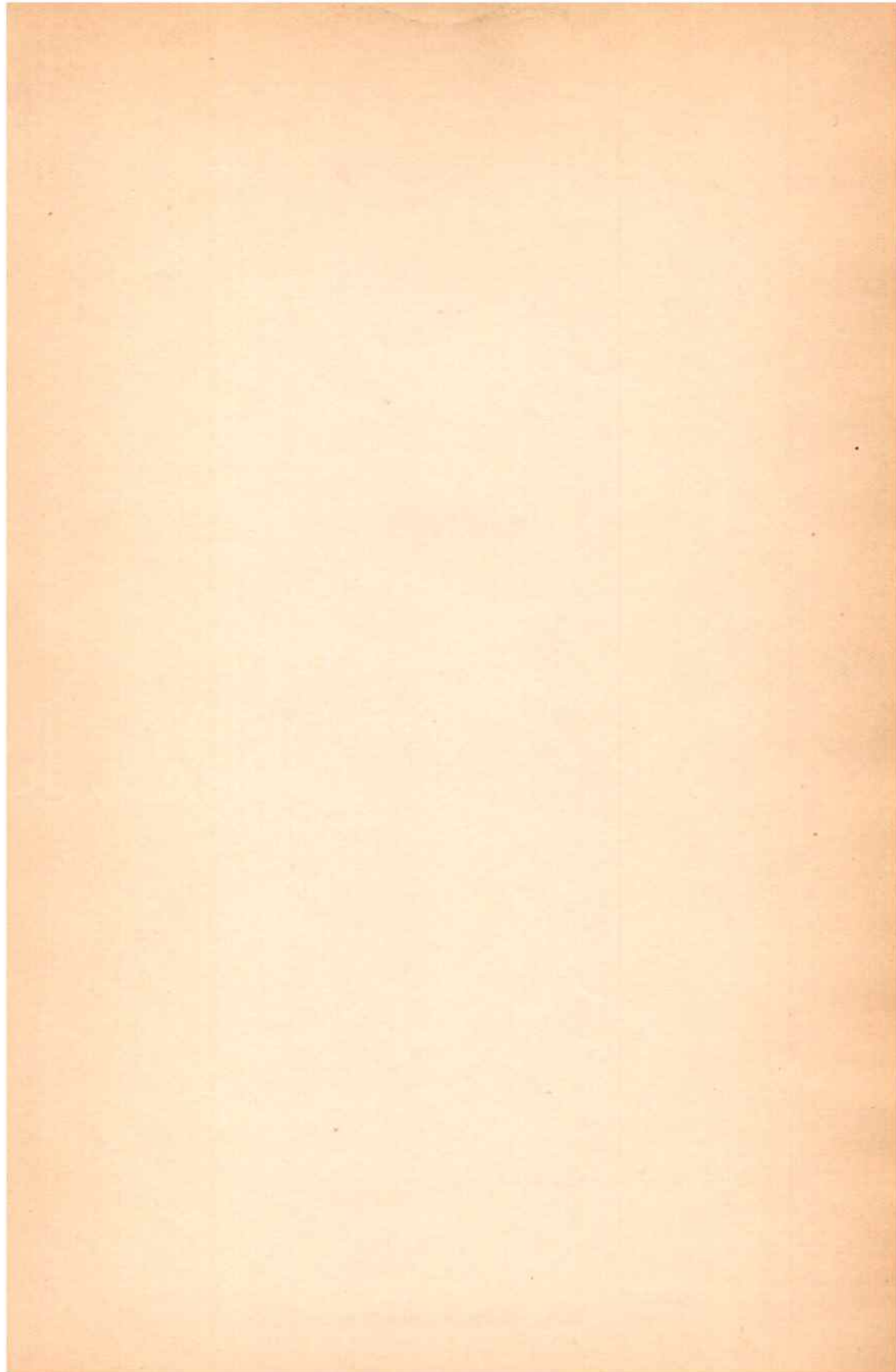




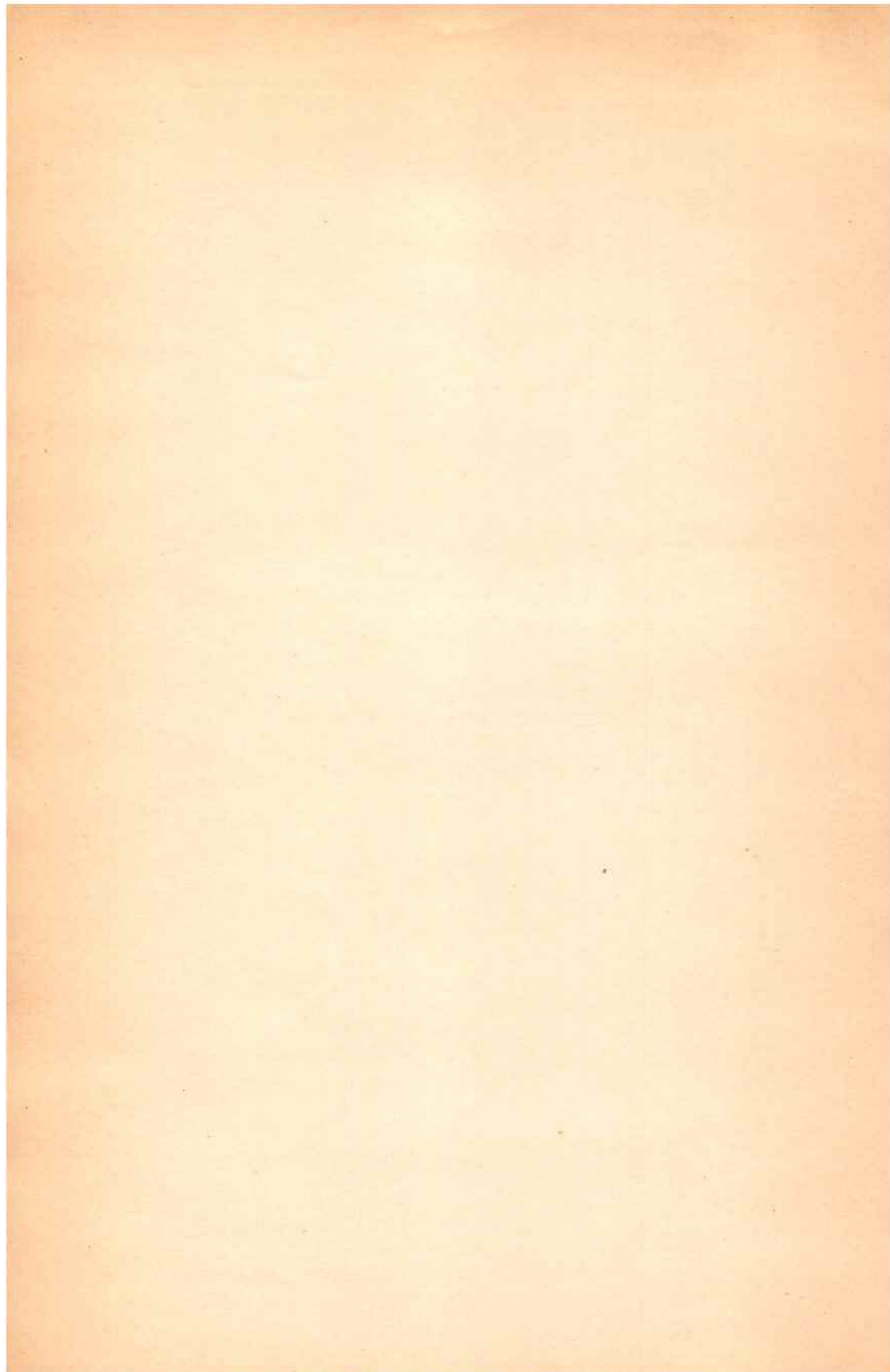


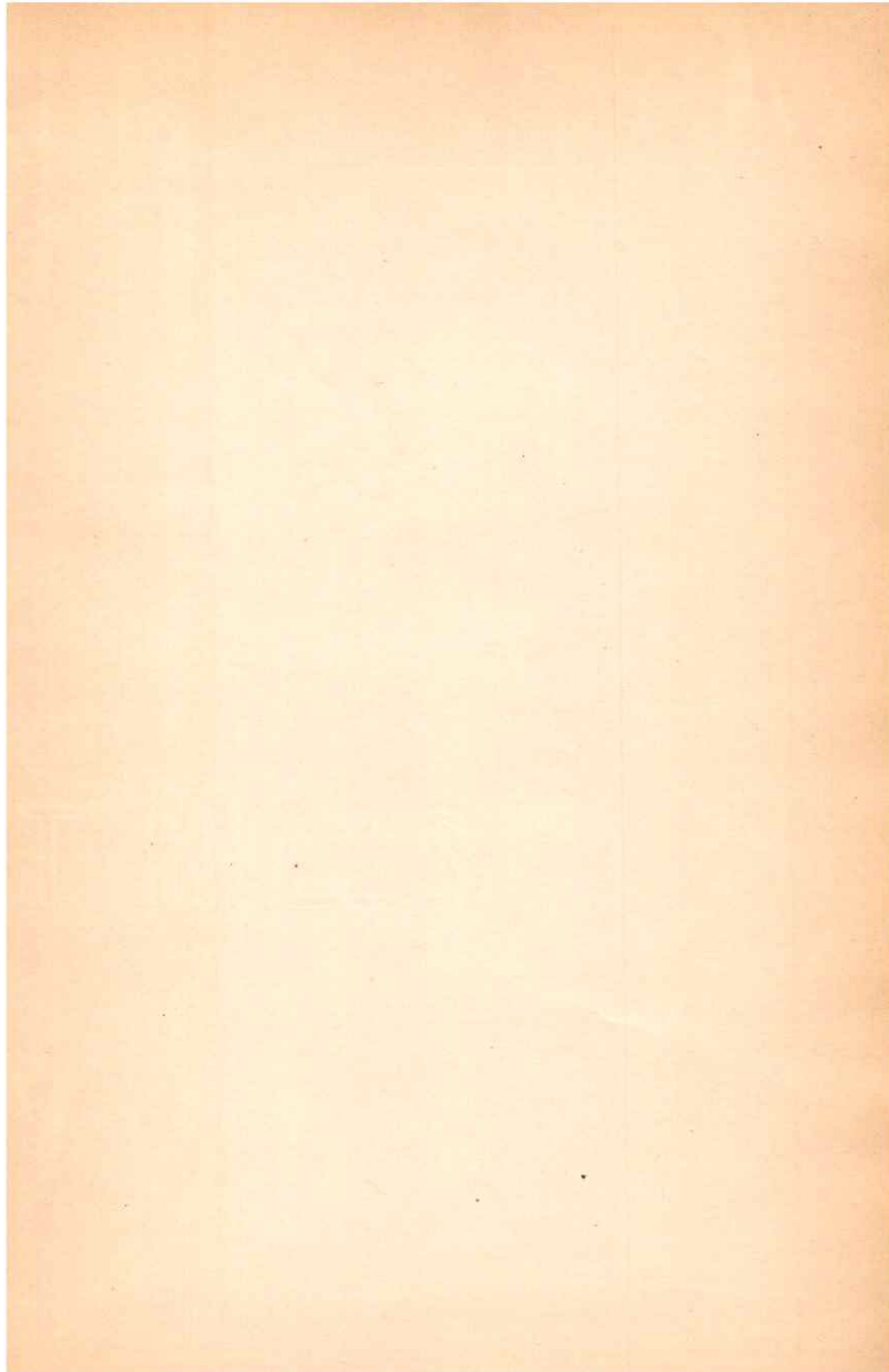


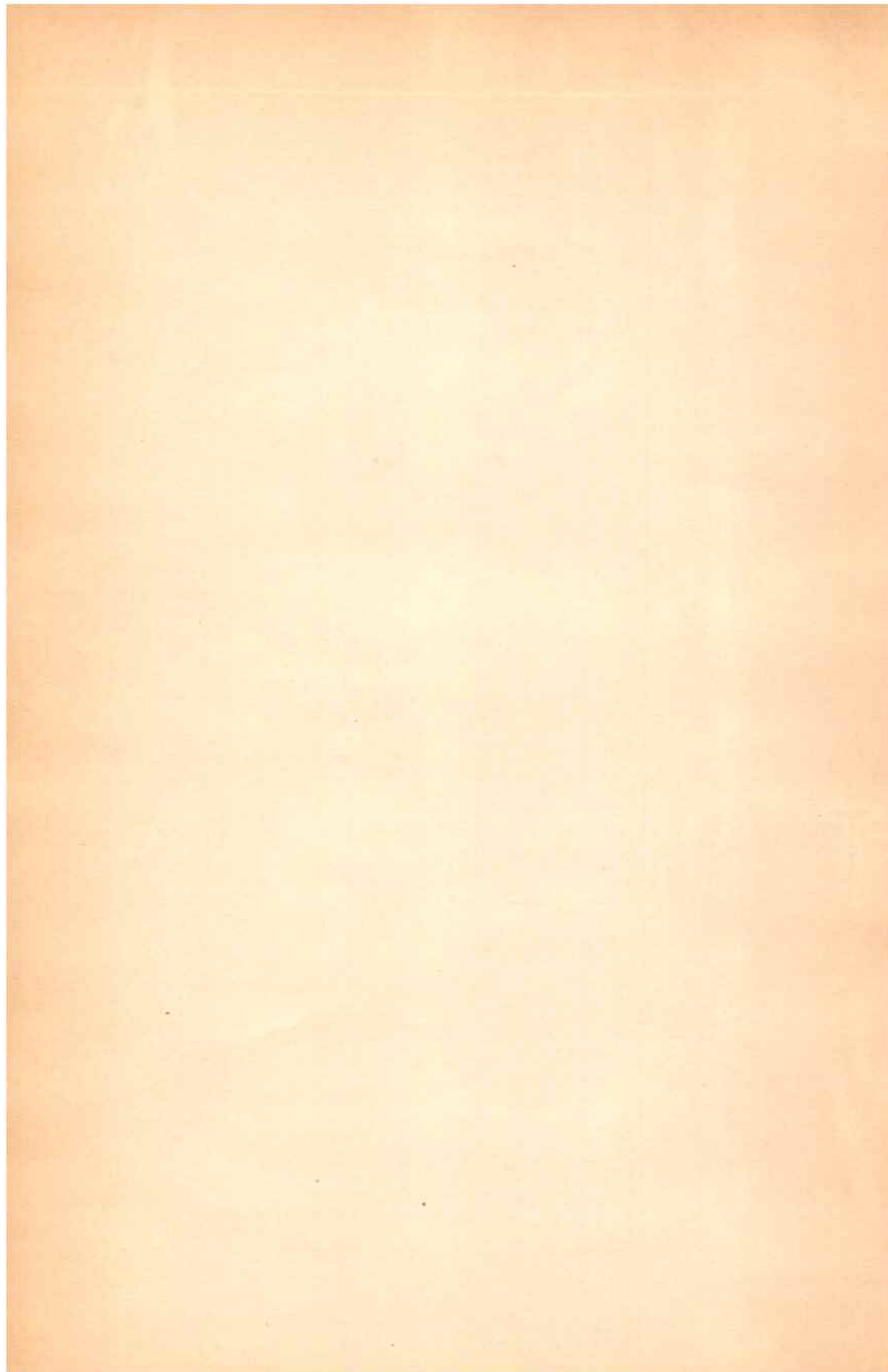


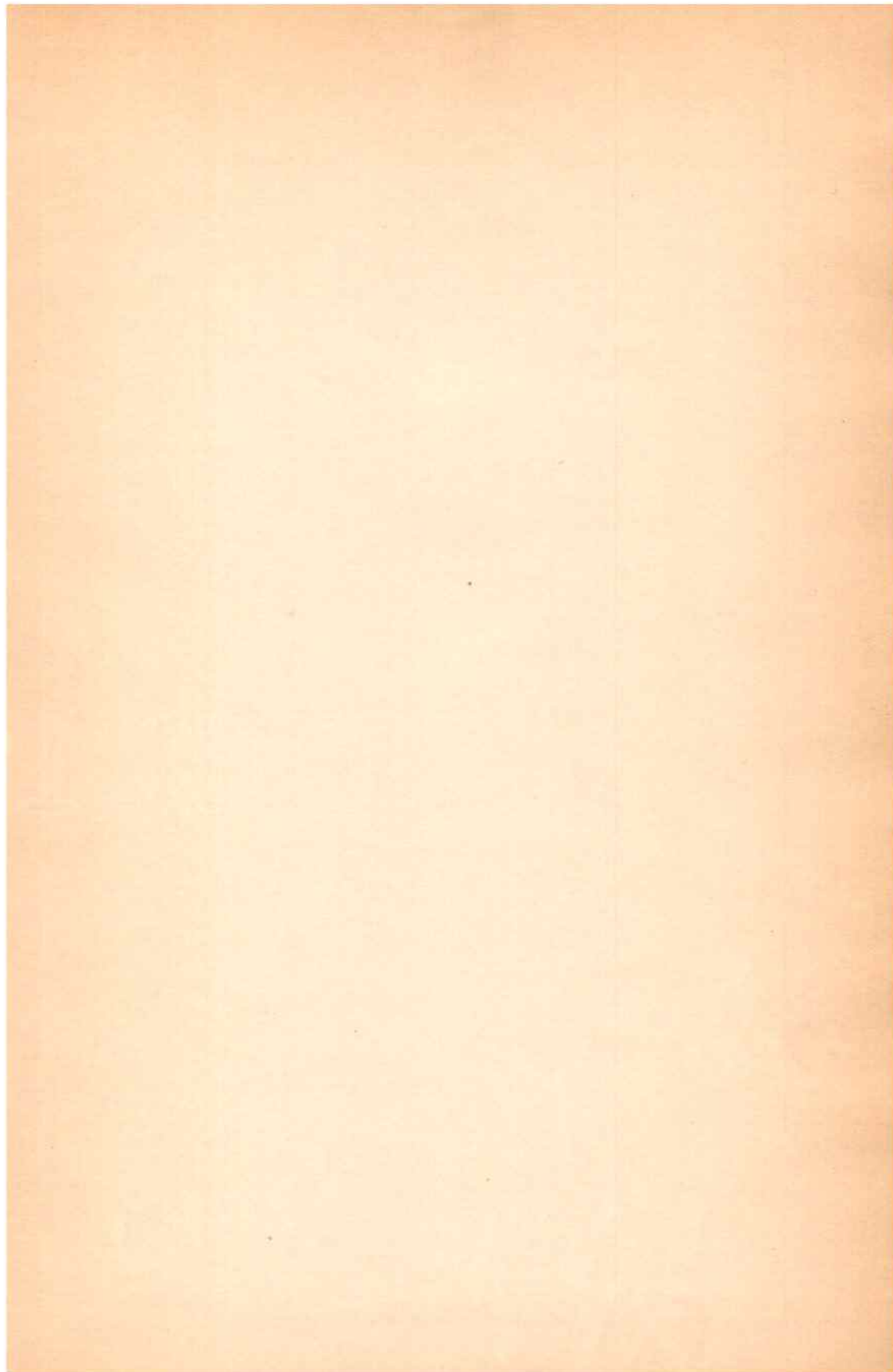




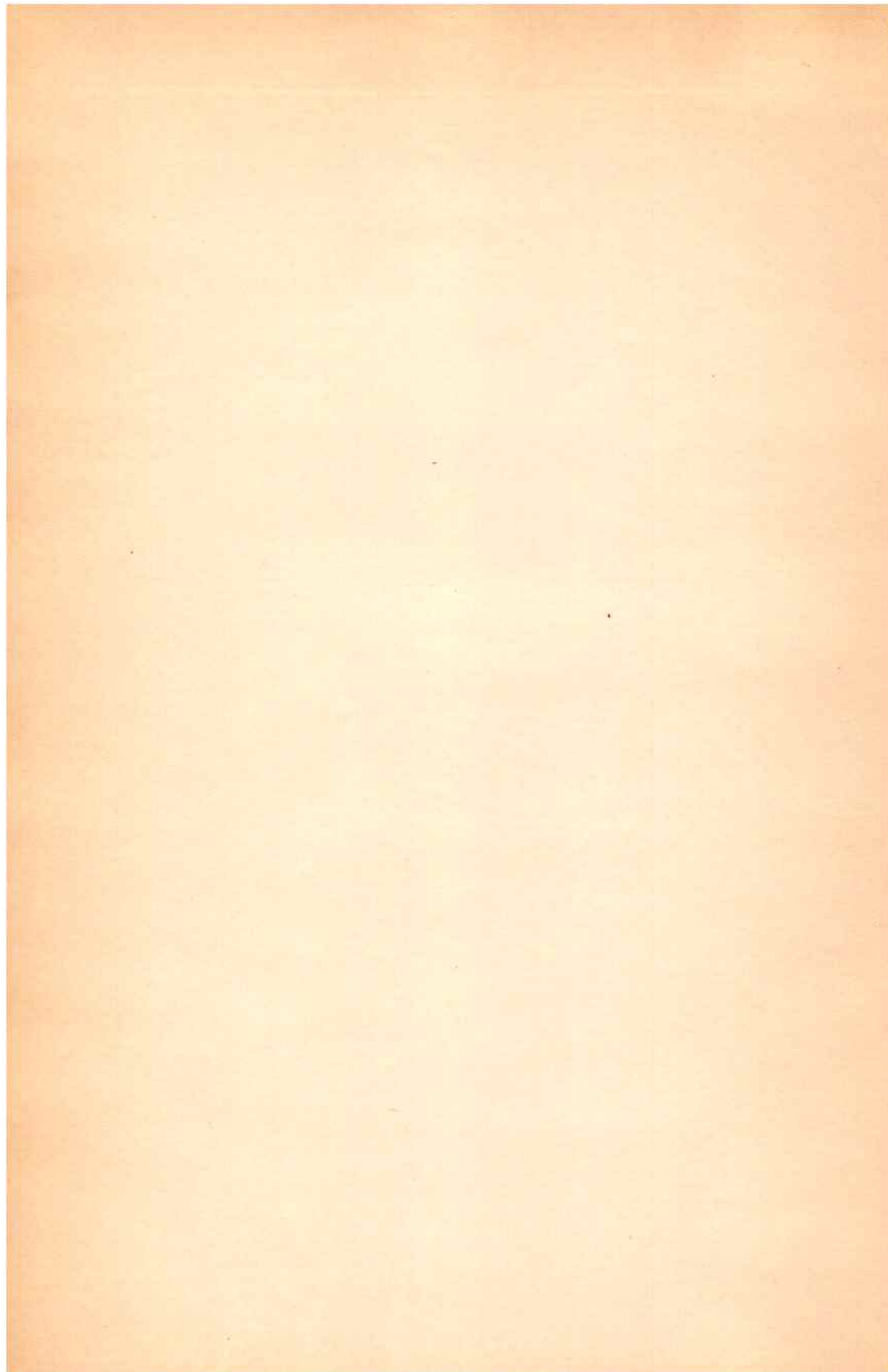


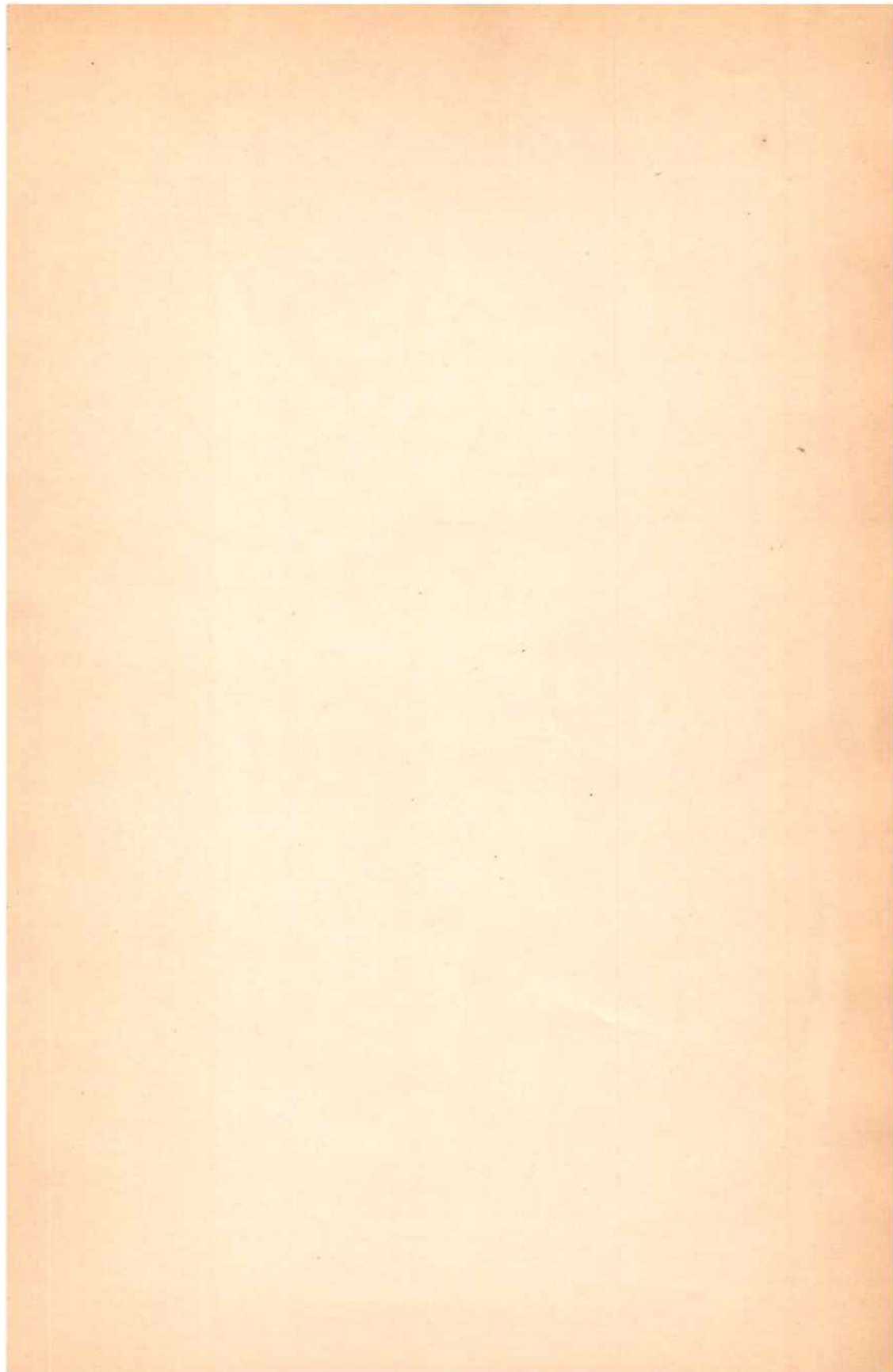


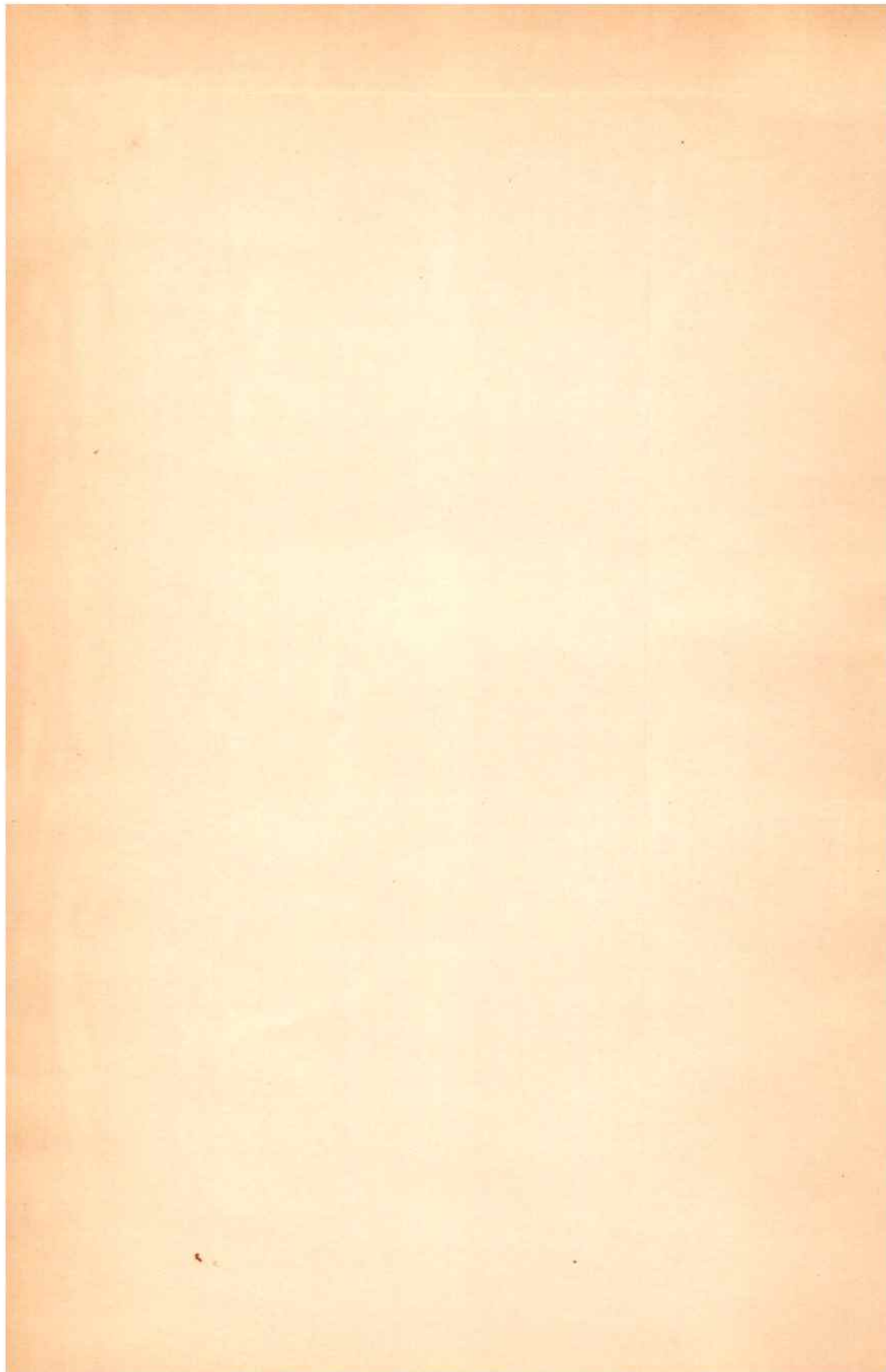


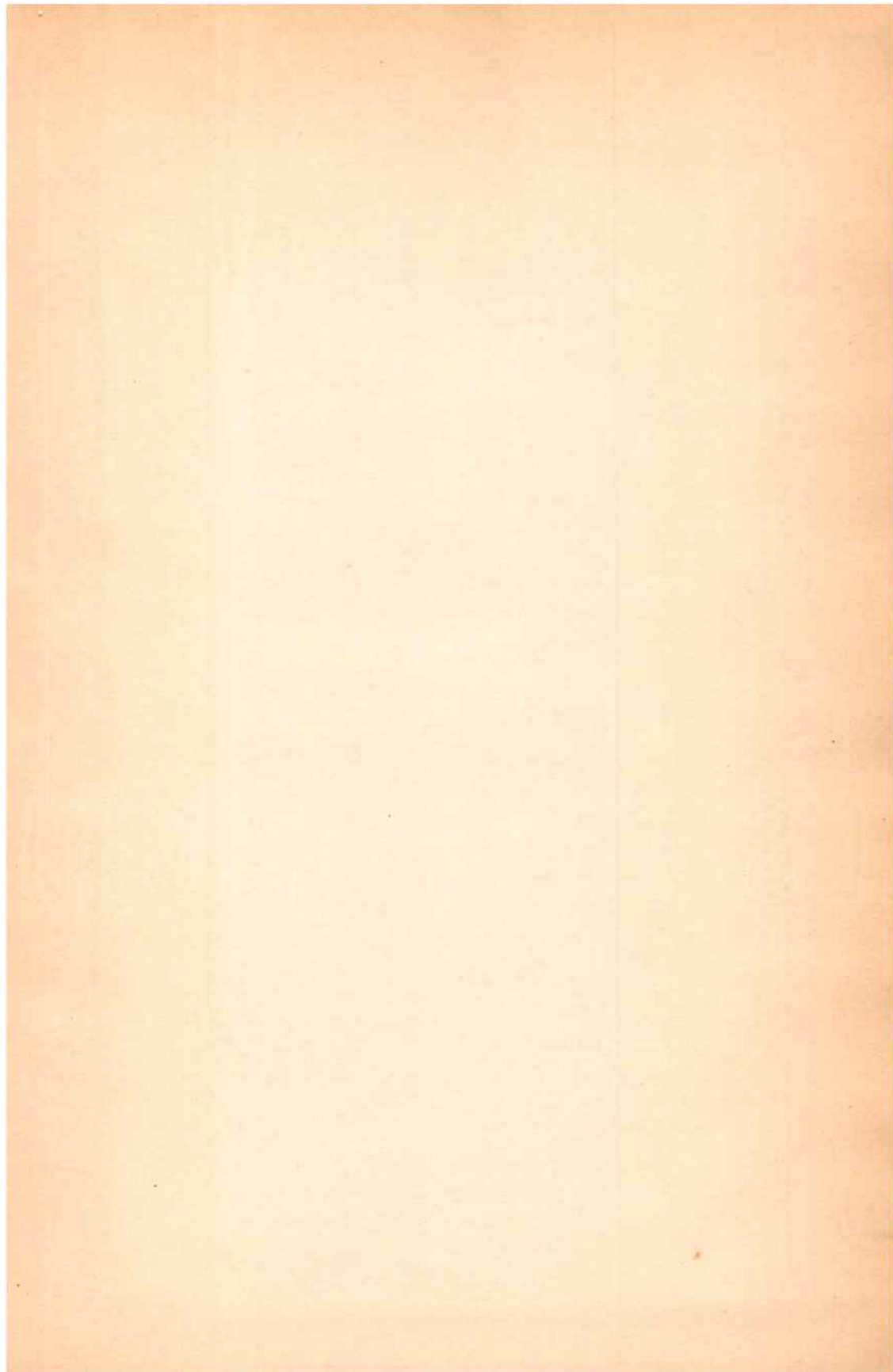




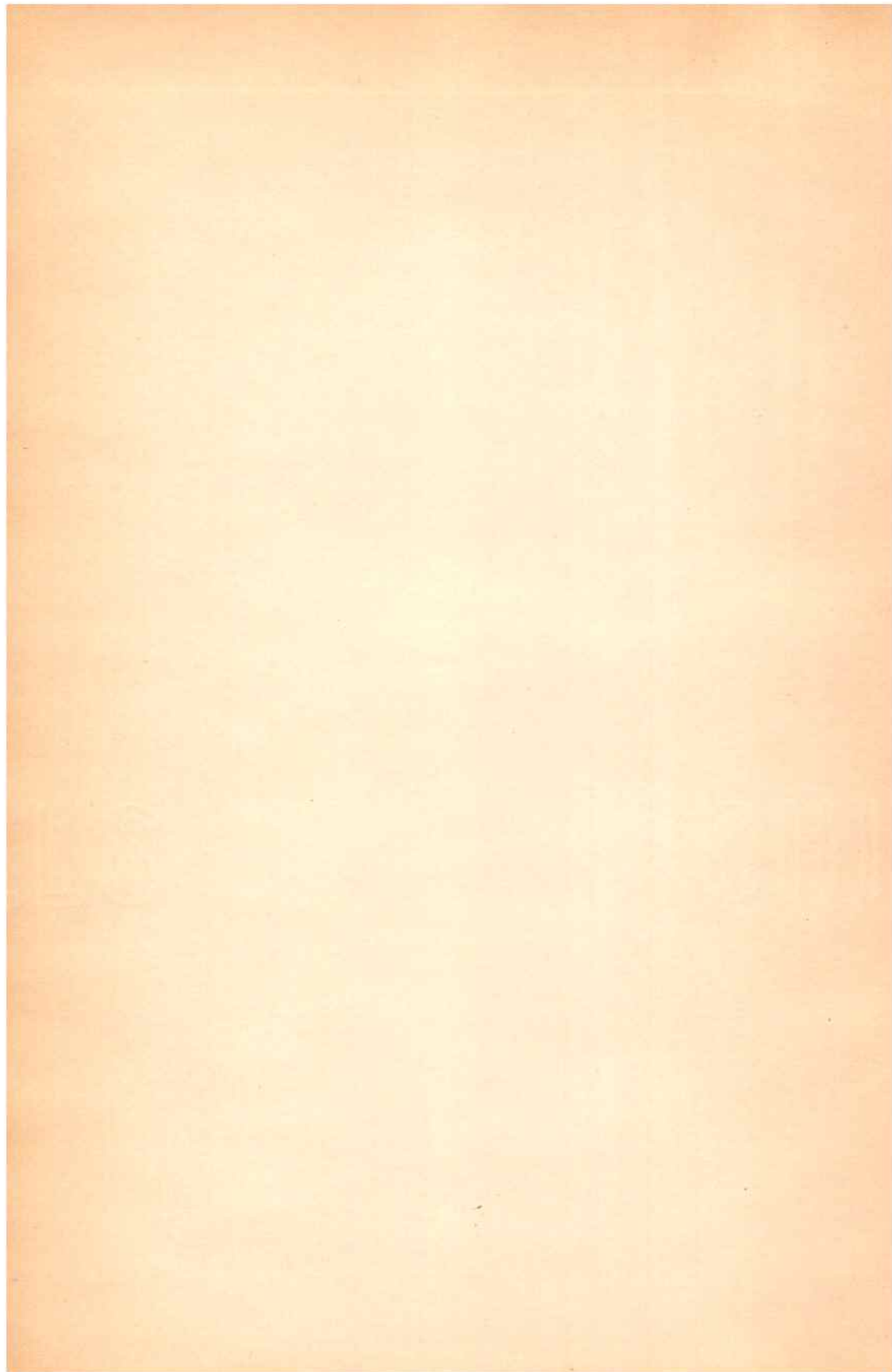


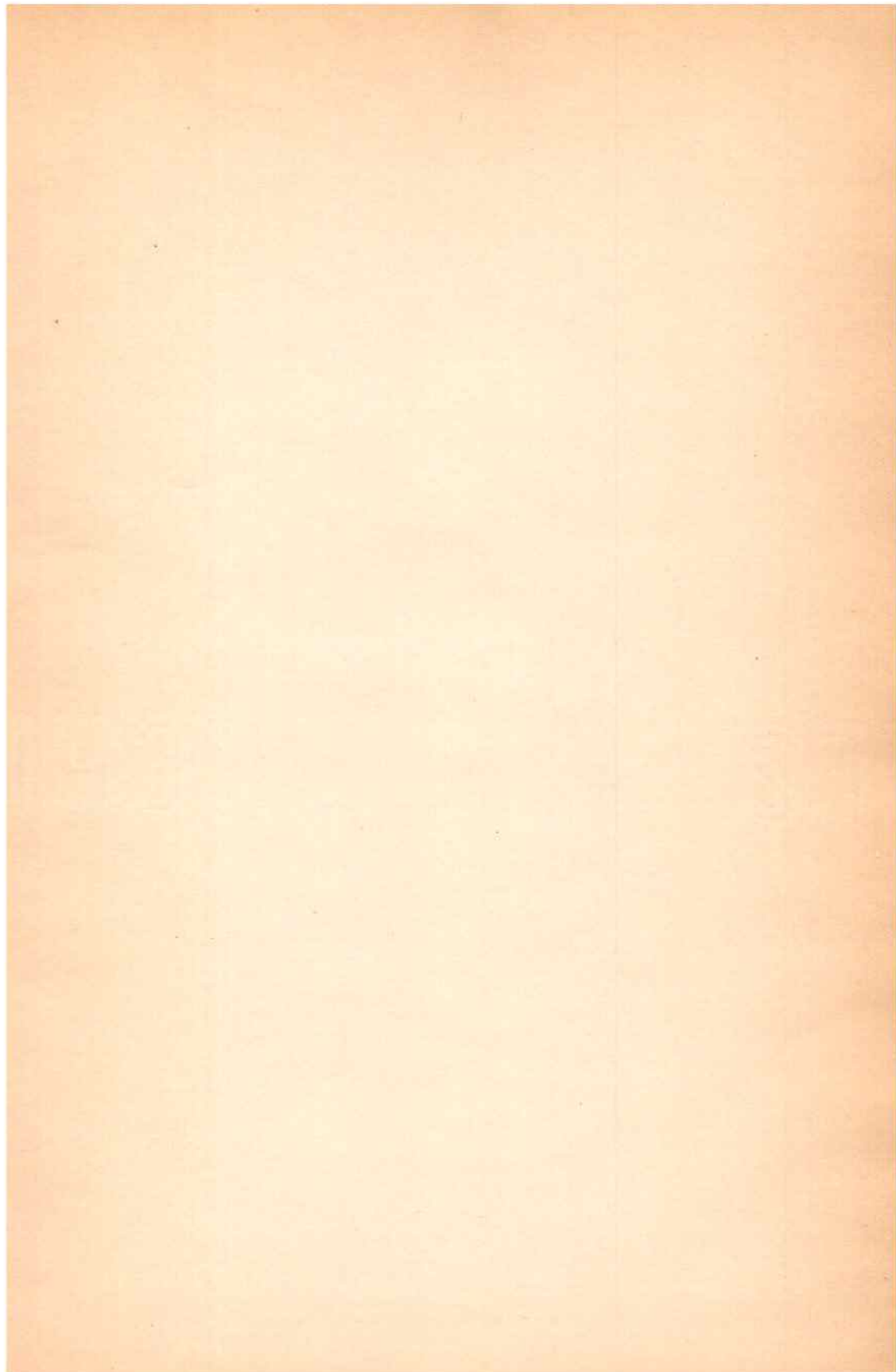


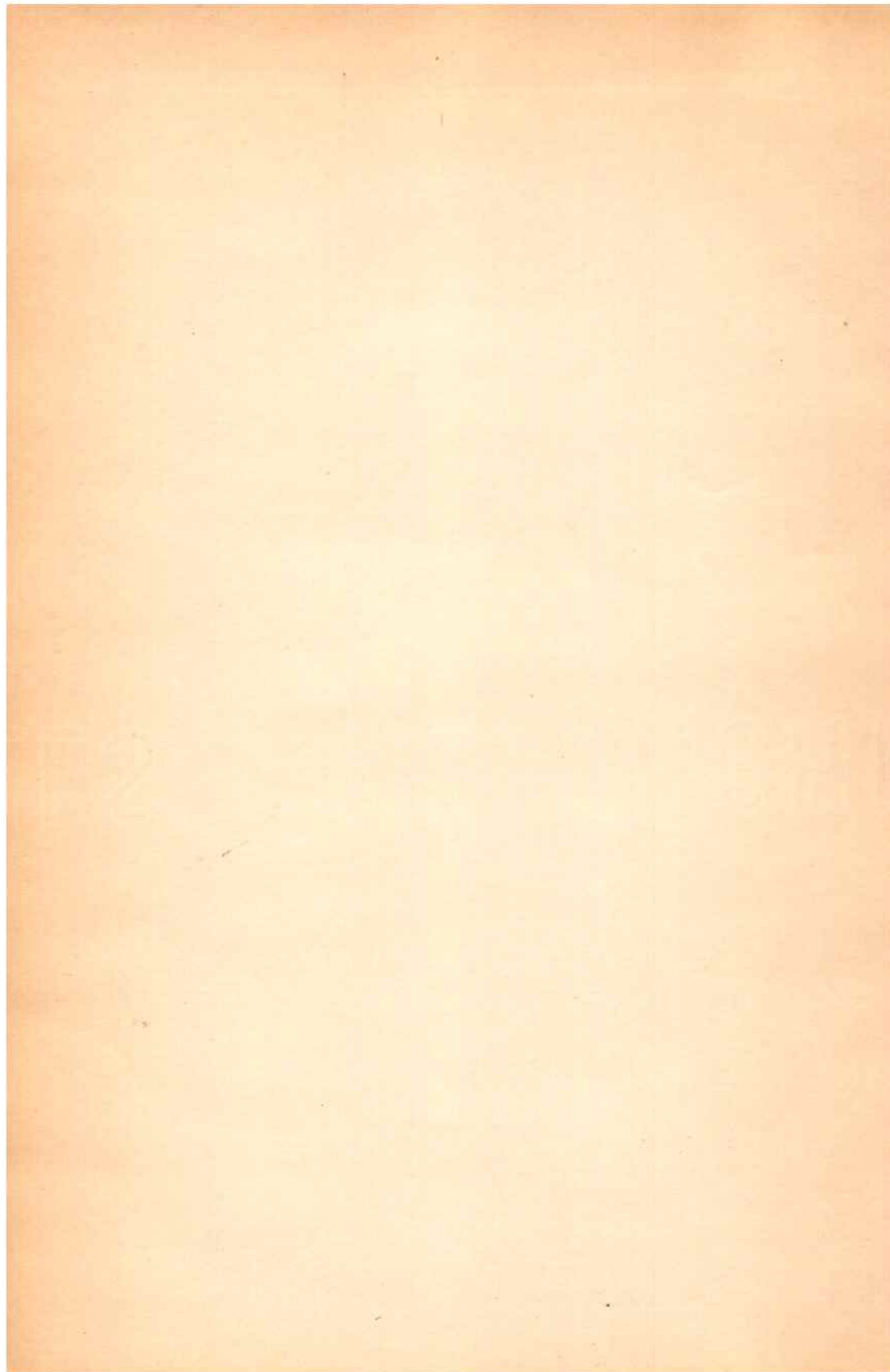




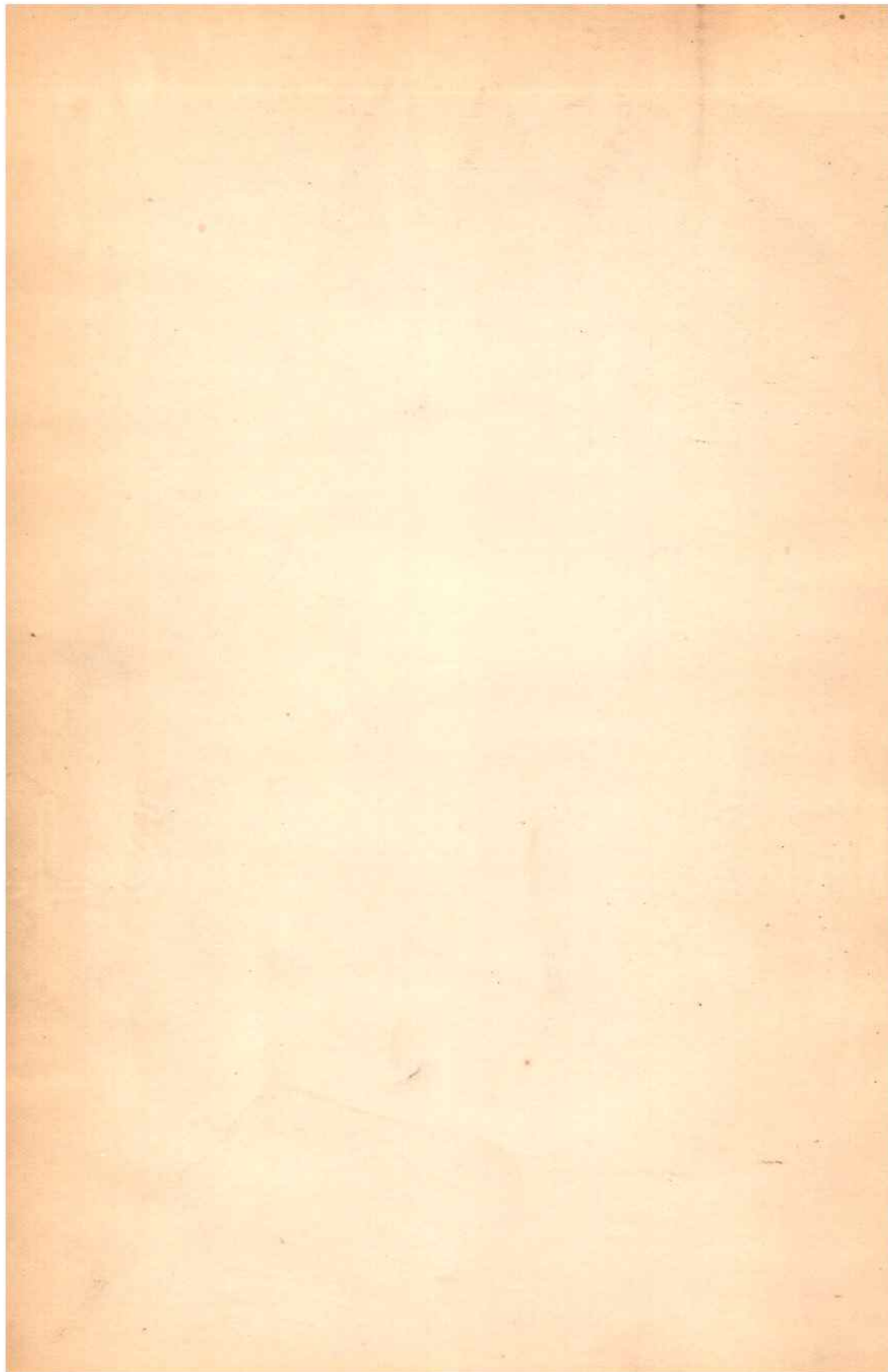




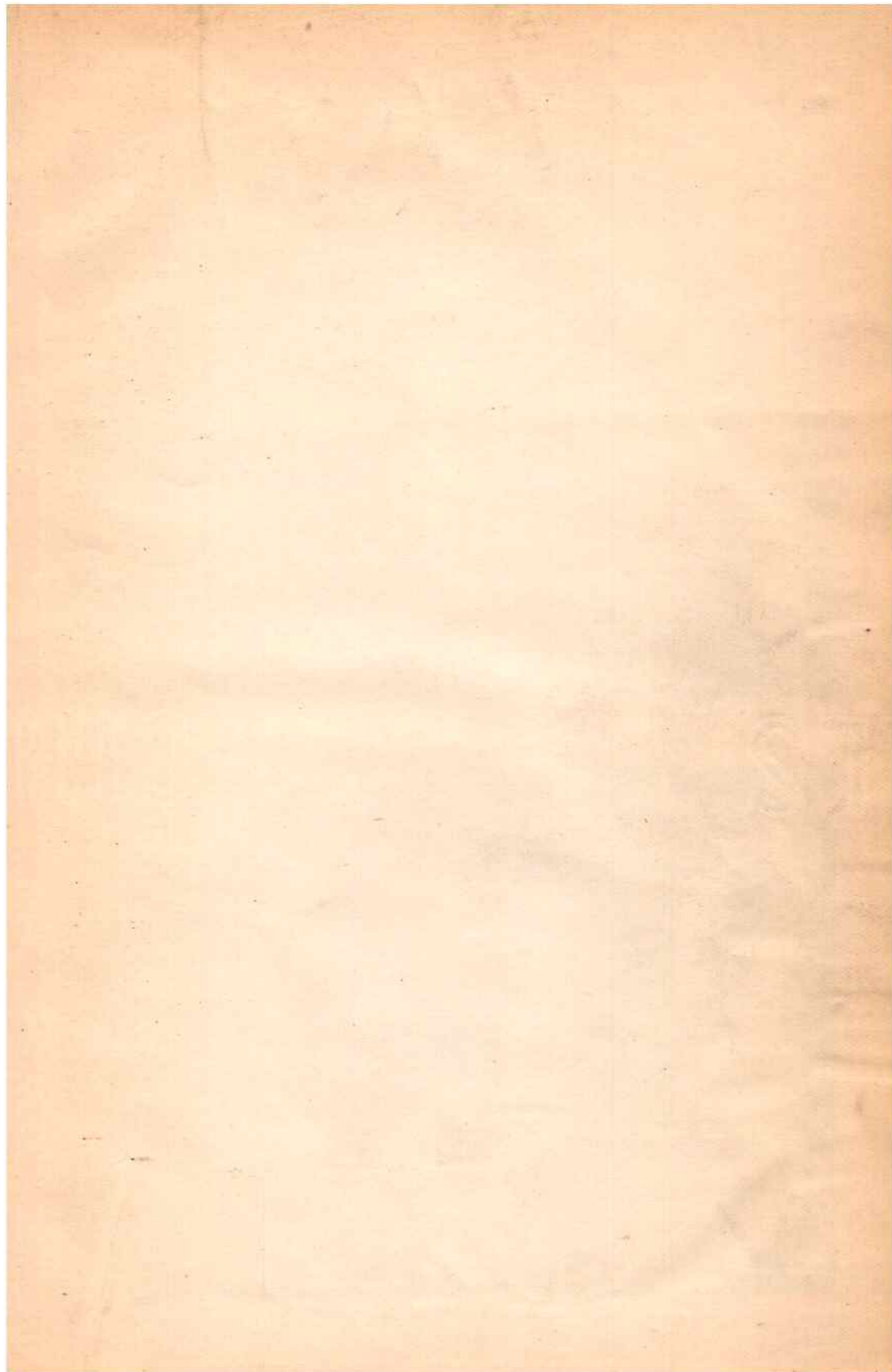


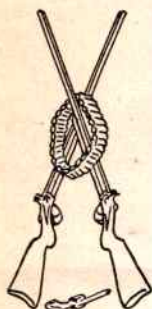












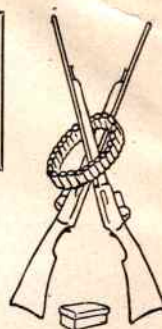
# GUNS AND AMMUNITION

EDITED BY ROBERT A. KANE

## TOPICS:

THE REVOLVER AND ITS USE.  
THE PACIFIC COAST WINS.  
HOW TO BECOME A CRACK SHOT  
WANTED—A .22 AUTOMATIC PISTOL.

THE KRAG-JENKINS SPORTING RIFLE.  
THE BOLT VS. THE LEVER ACTION.  
THE LEVER VS. THE BOLT ACTION.  
ANSWERS TO CORRESPONDENTS.



## THE REVOLVER AND ITS USE

### VIII.—CONCLUSION

PRIOR to the invention and adoption of smokeless powders the reloading of cartridges for any kind of a shooting weapon was regarded as merely a perfunctory performance, entirely unattended with danger, and within the capabilities of the most absent-minded individual. 'Tis true, there was much that might be termed drudgery connected with the work of reloading black powder cartridges, but having once learned the routine, the ceremony was almost wholly mechanical. Every shell was made to hold a specified amount of powder. It was impossible to add more as the shell would not hold it and allow the bullet to be seated; to use less only had the effect of reducing the chamber pressure. Variations in the weight of the bullet produced only a little more or less recoil. The utmost limit of powder and lead that could be used in any pistol cartridge was not sufficient to produce disastrous results when fired from standard weapons. Since smokeless powders have come into general use all this has been changed. There are many brands of smokeless powder on the market, all differing widely in strength, size of grain, and each possessing some peculiarity of chemical construction which renders it necessary that the utmost care be used in their manipulation. Some brands require a special primer to give prompt and complete ignition and combustion. To use a slow or weak primer with an explosive of this kind would be but to invite disaster, as the bullet might stick at any point in the barrel. To overcome this a slight priming of a fine grained black powder may be used. When two kinds of powder are used the vacant space in the shell should be filled with soft wadding or some substance that will permit the seating of the bullet without undue pressure on the powder, otherwise

the powders will mix and the effect be lost. With a proper primer almost any smokeless powder, if used with intelligence and in proper proportions, will give satisfactory results in reloaded cartridges. "Marksman," "Bullseye," "Unique," "Lightning," DuPont No. 1, New Schultz, Infalible, and many "DuPont No. 1," "New Schultz," "Infalible," and many others are being used successfully by investigating marksmen. It is useless to advise against the reloading of ammunition. Americans are too independent to accept without question, advice which may be prompted by self-interest or which seemingly interferes with the right of every one to think for himself. It would be difficult to direct or maintain an effective argument against the reloading of cartridges with smokeless powder when perhaps the same journal may publish a world's record made with hand loaded ammunition. It is equally futile to point out the danger of errors in measuring or weighing powders by hand while our favorite sportsman's magazine contains cuts and graphic accounts of bursted Springfield rifle barrels and wrecked revolvers caused by ammunition loaded by the most delicately adjusted automatic reloading machinery, operated by trained workmen under the supervision of expert foremen. Modern explosives vary greatly in the form of the grain, and while at first this might not appear to the layman to be a matter of great importance, it has much to do with the qualities of combustion. It must also be considered as a factor in reloading, if a measure is used instead of a scale. If the grain of the powder is soft, hollow cut, or in the form of thin square flakes it is liable to mat, jam or cake in the reloading tube, or measure, more especially if it has been stored in a low temperature. To prevent trouble from under



or overloading caused by unequal charges of powder I would suggest that the load be carefully determined by weight first and the measure adjusted to that amount. A glass tube should be used to convey the powder charge to the shell so that each failure to register would be visible. Having thus placed the proper amount of powder in the shell either insert the bullet by hand at once, or place the shell on a separate table so that there will be no possibility of inadvertently doubling the load. Cartridges intended for use in the revolver should always have the bullet secured by crimping the shell to prevent being jarred out by the force of recoil. I might give a great many loads of different combinations of powders and weights of bullets, that might be of temporary use to young shooters but in view of the fact that improvements in powders, bullets, primers and arms are constantly being made, I would prefer to impart such information as would be most useful and up-to-date, in a separate article. I have often been asked the question: Is it advisable to reload ammunition for any kind of an arm? The answer depends largely on the financial status of the person asking for information and the kind and amount of shooting he intends to do. Assuming that the majority of shooters are men of limited means and wish to shoot rifled arms a great deal, I would say, yes; to the man who hopes to become an expert shot or who makes shooting his sole sport or recreation, yes; to the student of ballistics, the investigator, the target shooter and the man who is possessed to a reasonable degree of that very desirable quality commonly known as gun sense, yes. The man who has never reloaded cartridges for his pet target rifle, his long range match or military rifle, or his favorite revolver, has missed many of the chief delights of a shooting man's experience. It is to the melting pot and the powder measure that we owe much of the progress of recent years in the even widening field of marksmanship. Many of the mysteries of ballistics, the phenomena of combustion, under varying conditions, and the puzzles of gyrastics have been studied and revealed to us by the patient solitary enthusiast, the results of whose work demonstrated to others eventually sets a new mark and forces a higher standard of arms and ammunition. To those who shoot only occasionally, reloading will not pay nor will it be any advantage to them. The careless or slovenly should never attempt it, as it is only by giving the closest attention to the most minute detail of the work that success may be hoped for, even if the element of danger were entirely eliminated. There will always be some who are desirous of experimenting with new loads and variations from the standards. In every case I would advise the use of the Ideal Hand Book. It is a compendium of valuable information and contains all that has yet been developed by experts in the art of reloading with smokeless powders.

I am almost daily in receipt of letters not only from young shooters just beginning their career as marksmen, but from veterans in the shooting world, who are anxious to keep in touch with the latest and best in fire arms. All asking, "What make and caliber of revolver would you advise me to purchase?" In most cases those who ask for information in regard to the revolver or pistol are men who are serious in their determination to master the arm and are anxious to get started right. It is not diffi-

cult to advise this class of men. For them the best is none too good and in the end is much the cheapest. Undoubtedly there are many good medium priced revolvers and pistols offered for sale, which for certain purposes may be desirable, but for continuous service for safety, accuracy and durability only weapons of established reputation should be considered. The Colt and Smith & Wesson companies make the best revolvers and pistols in the world, and they alone are the chosen arms of the world's greatest experts, military men and adventurers. They are made in models and calibers to meet the requirements of every department of shooting and the purchaser of either of these makes can feel assured that his guns are of a standard, as well established and as reliable as the gold coin with which he pays for his purchase. Most beginners have a rather vague idea of what constitutes good shooting with the revolver, and while deep down in their minds they may have visions of duplicating the performances of some celebrated marksman, their efforts to follow his methods do not always bring the success hoped for. At this stage one is in danger of becoming discouraged and losing interest, or if fairly successful in their first attempts at target work, the temptation to specialize as an exclusive target shot is often too strong to be resisted. There is, of course, a certain satisfaction in being able to shoot a string, close to the possible, on the regulation target over a measured range, but those who are satisfied to confine themselves to one branch of shooting will never fully realize the infinite possibilities for sport which a mastery of the unconventional methods of using a modern six shooter affords. To the frontiers man and those who in a natural and unstudied manner apply the six shooter to its every legitimate use, there is a companionship and fascination which can never be wholly understood by the more deliberate and calculating target expert. I do not wish to be understood as belittling the importance of systematic target practice with the six shooter, nor would I speak disparagingly of the exclusive targetshot. His is an extremely useful and necessary branch of the sport, as a means to an end, but like the methods of our brethren of the Schuetzen rifle, wholly impractical from the viewpoint of the hunter, the soldier, the civil officer or the snap shot. Who among us as riflemen, after having experienced the delights of winning premier honor with the "Old Krag" or the handy Springfield at the various specified ranges, in different positions, at slow, rapid and timed fire, or has felt the exhilaration of participating in a hotly contested skirmish run, would care to drop back into the dull monotony and unvarying methods of that class of shooters who are limited to one range, one style of rifle, (much over weight) encumbered with appliances which no sane man would think of using on a sporting or military arm, as an aid to accuracy. Many of our noted revolver shots who make a specialty of shooting at flying or rapidly moving objects also possess considerable skill as target shots. This is as it should be, and it is the consensus of opinion of these real masters of the shot gun that practice at stationary targets is but one of the primary grades in the marksman's education. I am cordially supported in this view by many of the very best writers on matters pertaining to marksmanship. Military instructors and tacticians are already beginning to forecast the future



and note the trend of events. It is evident to every one who cares to see, that there will be few stationary targets within the danger zone in battles of the future. With this in mind, no position should be considered tactical or taught to troops that is not sufficiently mobile to enable the marksman to deliver his fire with the utmost rapidity within effective fire range, with accuracy. This system would apply more especially to troops armed with the pistol as to them in a great measure must fall the honor of hand to hand fighting.

The pistol is the most mobile of all modern weapons not excepting the saber or bayonet. It is for this reason that I would hesitate to recommend the conventional shooting position of the target expert, to the beginner who wishes to attain genuine proficiency along practical lines, with any one hand gun. An effective shot can be delivered from any position, with either hand, while mounted or afoot, from moving trains or vehicle, at targets stationary or in motion, without assuming any of the statuesque attitudes or strained positions so often affected by self-conscious marksmen. I believe that if we were to apply the same common sense methods to our practice with fire arms that we do to baseball, football, tennis and other sports requiring action and a certain amount of strategy, we would soon improve existing methods of handling the rifle and six-shooter. With the beautifully proportioned and exquisitely balanced side arms of today it would require no more preliminary bracing or posing to deliver an effective shot than does a well trained boxer to deliver an effective straight arm jab. For the reasons given I favor the selection of the lightest weight pistol that can be used with an effective load. Trick shooting has no place in the repertoire of any marksman who values his reputation. No honest marksman will resort to trickery and no genuine marksman will need to. On the other hand fancy, and position shooting will prove a most delightful and interesting sport for those who have the perseverance to work and acquire the skill necessary. It may be argued that fancy shooting is of little practical value in the development of a pistol shot. I do not share this view, however, as I believe that anything that will stimulate the interest in shooting, train the muscles and strengthen the vision, develop confidence and give complete control of the weapon, is of some practical value. Young shooters usually take kindly to fancy shooting, and if fairly successful or near a competent and enthusiastic instructor, they seldom need urging to practice. As a nation we are infinitely more practical and matter of fact in all our methods of using fire arms than our English cousins or the natives of continental Europe. Perhaps it is because we are a younger people and have less to unlearn, or, because we are not yet so far removed from nature as to have lost our individuality. Some of the instructions published for the guidance of aspiring pistol shots by foreign experts are positively absurd, as considered from the American view point. Imagine one of our genuine old time western men "picking a nice, fast, smooth galloping, quiet, handy, horse to shoot from," or saying that "it is useless to try to shoot off a horse unless both horse and rider understand school riding." How many of our cowboys would withhold a shot until his broncho could change step so as to lead with a certain leg. Even the color and

style of one's clothing is prescribed abroad. It is not thought advisable "to wear too light a gray for deer stalking with a six-shooter in England; a grey-green is better." Was anything ever more absurdly effeminate? To fully sense the situation as it would appear to Americans, picture to yourselves some "old alkali" refusing to take a shot at a coyote because his spurs were not mates, or his chap's were cowhides instead of angora. We have gone to the limit in our senseless imitation of foreign fads. Some of our soldiers look like caricatures in their German headgear with a vision about the size and shape of an army bean. We have stuck our officers legs into stiff, heavy, unyielding and unsanitary English putties of harness leather, and in our national arm we have reproduced with marvelous fidelity the club like stock of the German army rifle. And this, too, regardless of the fact that Americans have long been famous for the beautiful airy lines of their small arms architecture. Our riflemen have long since proved and maintained their supremacy and demonstrated the superiority of American methods on many a hotly contested field. Under the relentless spur of frontier conditions our hardy pioneers evolved and developed a school of offence and defence with rifle and pistol which in my judgment it would be wise to perpetuate in certain departments of military activity today. How many of our brave, enthusiastic young officers and men might have been spared to the service for many years, and survived the cruel bolo rush if they had been properly coached in the use of an effective six-shooter according to guerrilla or western frontier methods. The training of every person in the use of the pistol or any one hand gun should include plenty of practice of the quick draw and shoot order. Celerity of movement in getting the pistol out and delivering the first shot first is under certain conditions more to be desired than candle snuffing accuracy. Our service revolvers as in use at present, nor the automatic pistols undergoing the test with a view to adoption, do not lend themselves readily to the methods of manipulation as above suggested. The double action lockwork has no place on a belt gun, while the general lines, the size and shape, and the angle at which the handle of the automatic pistol is placed, renders rapid manipulation or speedy initiative fire impossible. The automatic type of side arm is, however, full of possibilities and will doubtless be the arm of the future although in a greatly modified form. With the improved pistols will come more sensible devices for carrying them so that it will not be necessary for a soldier to dislocate an arm while trying to get his gun into action. There are times in every fighting man's experience, when a fraction of a second life or death this must be taken into account in designing the small arms for our soldiers. As compared with type of revolver now in use the autopistol holds many points of superiority in the way of fire speed and it is capable of still greater development along the same lines. Automatic ejection with each shot and the admirable system of the auxiliary magazine leave little to be desired as to performance when once started. It is, however, essential that something be done to so modify their type of arm, that the first shot may be fired without the delay incident to the shifting of a diminutive safety lever, a lock, or a preliminary function requiring the use of both hands. Since the disap-



pearance of our domestic frontier, and the passing of the original expert gun man, many of the really meritorious features of gun play have fallen into disuse. With the adoption of a new type of repeating pistol with greatly increased fire volume and speed of delivery, we may expect a revision of the manual governing the use of the pistol. It is earnestly to be hoped that both the new arm and the manner of its use will be distinctively American.

One of the chief obstacles to the development of marksmen in America is the cost of ammunition. Rifles and pistols of an extremely high quality are manufactured and sold at prices within the reach of every one. It requires considerable ammunition to develop rifle and pistol shots of the standard of ability as established by American traditions. The expense of every kind of shooting has steadily increased since the introduction of

smokeless ammunition, even the old black powder cartridges are more expensive now than they were thirty years ago. It might require considerable investigation to determine the cause of present high prices, but, if it would result in a reduction and a consequent increase in the number of shooters the effort might be worth the cost. In closing this series of articles I wish to acknowledge the many courtesies extended in the way of valuable data, and cuts by Mr. H. C. Hurlburt of the Colts Patent Fire Arms Co. of New Haven, Connecticut; the Smith & Wesson Arms Co. of Springfield, Massachusetts, and H. Tauscher, agent for the Luger automatic pistol. I also desire to thank my numerous friends who have from time to time given me their cordial support by generous praise and timely suggestion. In the great and growing fraternity of gun lovers we should be mutually helpful.

[THE END]

## THE PACIFIC COAST WINS

THE rifle shooting championship of the Universities and Colleges of the United States on indoor ranges goes to the Pacific Coast for the first time. The judges appointed by the National Rifle Association to examine the targets made by the different teams which shot on their home ranges during all of last week, report that the team making the highest score was that of the State College of Washington. Columbia University of New York, the winner of the trophy last year, was second and the University of Wisconsin, third. This National competition, the second of its kind held in this country, is rapidly increasing in favor among the universities. It was inaugurated last year and only four teams competed; Columbia University, Yale University, Harvard University and George Washington University. This year twenty-one institutions entered. Harvard University withdrew before the shoot owing to the team's inability to secure arms with which to shoot. Three other institutions, Drury College of Springfield, Mo., University of Idaho and the College of St. Thomas, St. Paul, Minn., did not send in their scores, leaving seventeen teams in the race. The order in which these seventeen universities and colleges finished, with their scores, are as follows: State College of Washington, score 949; Columbia University, score 923; University of Wisconsin, score 918; George Washington University, score 918; Massachusetts Agricultural College, score 914; University of California, score, 908; University of Iowa, score 901; University of Maine, score 897; Agricultural College of Utah, score 896; University of Pennsylvania, score 889; Virginia Polytechnic Institute, score 870; Cornell University, score 867; University of Nevada, score 861; Michigan Agricultural College, score 846; Louisiana State University, score 825; Delaware College, score 818; Rhode Island College, score 816. The honor of having made the highest individual score in the match goes to A. A. Leach, Jr.,

of Columbia University, who made 49 points standing and 49 points prone, a total of 98 of a possible 100. The winning team as well as ten others used the United States Army .22 caliber Gallery Rifle in the match. The other six used the Winchester .22 caliber musket. All used a .22 caliber short cartridge. The match was shot at 50 feet on a National Rifle Association target having a one-inch bullseye; ten students composed a team, each member of which fired 10 shots standing and ten shots prone. The possible score which a team could make would be 1,000 points, so that the winning team made the excellent score of only 51 points less than the possible, or an average of 94.9 per man, which shows efficiency in team work and conscientious training. The winning team was in charge of Capt. H. E. Mitchell, the United States Army Officer detailed to the college as military instructor.

Of the seventeen institutions competing, fourteen were land grant or agricultural colleges having military departments. These colleges are issued arms and ammunition by the Government and are in much better shape to carry on rifle practice work than such institutions as Yale, Harvard, Columbia and Princeton. The members of such teams must buy their own rifles and ammunition. Even this privilege is denied the riflemen of Harvard University. In 1905 Congress passed a law authorizing the Chief of Ordnance, U. S. A., to sell the government rifle to rifle clubs affiliated with the National rifle Association, if the governor of the state approved. The Governor of Massachusetts would not approve of such sale to the Harvard Club. There are fifty-four State Colleges in the United States having military departments under the control of the War Department. That only fourteen of these could get together rifle teams does not speak well for the military efficiency in these institutions. A good soldier is not made by close order drilling, whereas good rifle work is the keynote to military efficiency.

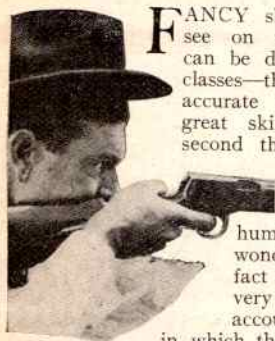


# HOW TO BECOME A CRACK SHOT

## V.—STAGE AND REVOLVER SHOOTING

By ADOLPH TOPPERWEIN

WITH ILLUSTRATIONS FROM PHOTOGRAPHS AND DRAWINGS



**F**ANCY shooting such as you see on the vaudeville stage, can be divided in two distinct classes—the first the real clean accurate shooting, requiring great skill and practice, the second the stage faker shooting with the assistance of an apparatus.

These miscellaneous humbugs pretend to do wonderful things when in fact they are as a rule, very ordinary shots. On account of the small space

in which the stage shot is obliged to shoot, his work is of an entirely

different nature from that of the outdoor expert, and it is restricted mostly to "position shooting" and such tricks as are catchy to the audience. The stage shooter hardly ever does any aerial work, as he would soon shoot up the back of the stage, unless he had it well protected, which he can hardly do as he moves from city to city, and this would mean the carrying of hundreds of pounds of excess baggage; therefore, he must please his audiences some other way. This is generally done by having a back stop made fixed on an easel, and backed well with a steel plate, covered with wood, which is in turn covered with paper or anything to give it a neat appearance. This is placed about fifteen feet from the shooter, though it looks much further away to the audience. The performer then begins his shooting by doing a lot of "position" shots, placing himself and his rifle in various difficult positions, shooting with a mirror, cutting cards and various other feats. Some times he has an assistant who holds various objects for him to shoot at. Shooting with a mirror is as simple as in the ordinary way. All one wants is a little practice. Also shooting with the sight of your rifle covered with a card is easy. All you must do is to shoot with both eyes open, and the card will appear transparent. There are some very excellent teams on the stage who do real, good, legitimate shooting, and all of their work is just what it appears to be—good shooting. While all do about the same stunts, some have a knack of doing their work in such a pleasing manner and in such a way to make it appear really harder than it really is. However, all this requires much practice. I do not approve of shooting at objects on the heads of assistants. It is not, in my opinion, justifiably to risk human life in this way. It is bad enough to shoot small

objects out of your assistant's fingers, but I don't think they ought to be practiced unless the performer is strictly a good shot and then great care should be exercised. For holding objects to be shot at, the assistant sometimes wears gloves, having steel thimbles concealed in the thumb and fore-fingers. If you are an amateur, cut out these tricks entirely, as there are so many other nice clean shots you can make without taking any risks. The stage fakir is the man who does the most wonderful things to the average on-looker, but to the man who shoots a bit these things look different. Some of these fellows, however, are so clever that it takes the closest watching to "catch on" and detect their tricks. If you see one of these acts don't let your enthusiasm get the best of you and go home and tell your friends of the wonderful shooting you have seen. The average public likes to be humbugged, and you can't blame the performer if he gives his on-lookers a "thriller," an act which keeps them guessing. As long as he can do this he "makes good" and his salary is assured. One of the most common things employed for stage work is the shot cartridge used in rifles and revolvers, and it is a very important factor in Wild West shows. For the stage performer they are handy for many reasons. In the first place it makes the hardest shots very easy, and he does not bother about heavy back stops to protect the stage. The charge of No. 12 shot with which the shell is loaded enables the most ordinary shot to do the most difficult tricks. The main apparatus however is his "platform" or "target" *against which he does his shooting.* This platform is, as a rule, covered with very thin boards or cloth, black or green velvet. Behind this target is a lever, some ten or fourteen inches long, pivoted in the center. One end has a steel disc about eight or ten inches in diameter, according to the performer's motion and skill, and of a size which he is pretty sure not to miss. The other end of this lever has a steel point at right angles. The whole thing is arranged in such a way that the steel point or spike is *directly opposite* the middle of the glass ball, or whatever the performer shoots at, or rather what he is supposed to be shooting at. All this arrangement is of course hidden from view by the cloth cover and this partition. The shooter has his assistant place the object in its place directly opposite and in front of the steel point, or to make it still more "catchy" *he holds it there.* The performer, holding the rifle in some difficult position, shoots *not at the object but through the partition and cloth, some eight or ten inches or more to one side.* His bullet goes through, strikes the steel disc on the



other side of the cover, which drives the spiked end forward, breaking the glass ball and at once returning out of sight. The trick is also done by having a large platform. The assistant stands with the object on his or her head, the performer goes back into the audience, even up into the gallery or balcony, shoots and breaks the ball. When this is done the steel disc on the lever is very large and some two feet over the assistant's head. Any reasonable man will admit that if some one really undertakes to shoot something from the head of a human being and does it fairly, he will do it *close in* and will not take additional risks by going back seventy-five to one hundred feet to do the trick, and by *artificial light too*. Snuffing candles is an old trick, and while this is not at all difficult in the legitimate way, you will see it done by placing three or four candles in a little box like arrangement, divided into compartments for each candle, some three by five inches in diameter, lined with steel plate. All you have to do is to shoot right in to these little boxes and the splash and rush of air will put out the candles. Any school boy can do it. Another way the candle trick is done and varied by using matches held by the assistant, is to have, like the lever apparatus a bellows placed behind the platform on the handle of which is fixed a steel disc, say six inches in diameter, and a rubber hose from the end of the bellows connecting with a little hole in the target. The assistant holds the candle or match opposite this hole, the shooter shoots against the steel disc on the bellows, drives the air through the rubber tube and through the hole, and out goes the match or candle. To the amateur shooter I will say, do not monkey your time away with "fake" shooting. If you do it some one will surely catch you at it and forever ruin your reputation as a shot.

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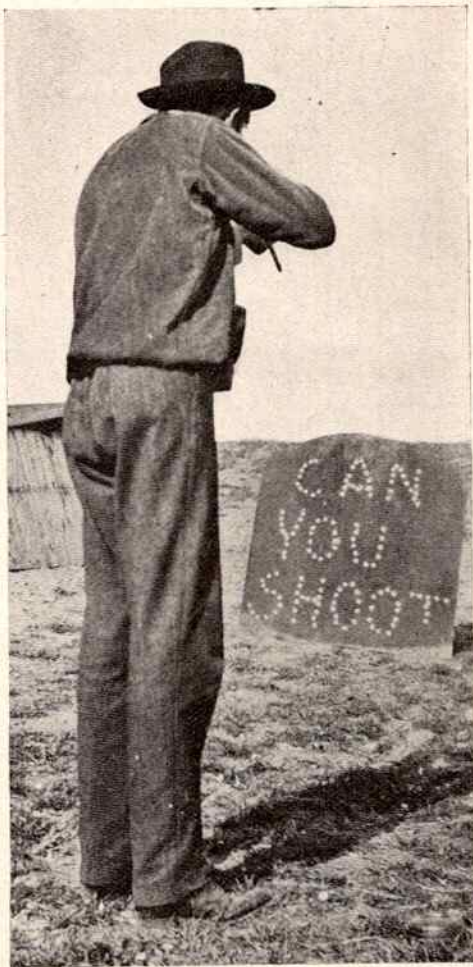
I will not attempt to say much about revolver shooting, but a few words may not come amiss. Shooting the pistol or revolver is an art entirely different from rifle and shot gun work, and takes

the closest kind of study and practice. On account of the shortness of the barrel and the fact that you must shoot it with one hand only, it is very difficult to hold and pull without moving your gun out of line of the object to be hit. When shooting a rifle your left hand grasping the barrel or fore arm aids your holding, but in shooting the revolver your one hand alone does the work. The main point in becoming a good "holder" is to learn not to pull the trigger but to *squeeze* it, employing the entire hand to do so. This "squeeze" must be *straight back*, not side ways. This, as a rule, to the beginner is most difficult and requires much practice.

A great deal has been written about the wonderful feats with the six-shooter out west by cowboys, who according to these stories *never miss*, and

whether on foot or horse back, nothing is too small for their unerring aim. These things, as a rule, originate in the mind of some writer who has perhaps never been west and by people who have absolutely no knowledge of shooting. There are plenty of men out west who shoot well with the revolver, but on the whole, the western man is greatly overrated as a pistol shot, and you may take the best of them, put them in competition with some of our eastern target revolver shots and the western man would disappoint you. In the first place the "cow puncher" always uses the Colts 44 or 45 single action gun, the best weapon made for rough use and good hard work, but it is not intended for real accurate shooting, with its short barrel and full charge ammunition. The man out west who has a reputation as a "dead shot" is a man who, as a rule, has in his career as sheriff or some officer of the law, killed his man (or more) simply because men of this caliber are cool, self-collected and quick to get the *first* shot. The "gun fighters" of the old days are pretty nearly all gone, some in the natural way and some by the "lead

route." These men *would* and *could* shoot quickly, and shoot at men in the same cold blooded way an ordinary person would shoot at a tree or stump, and as this kind of shooting was, as a rule, done



HE CERTAINLY CAN

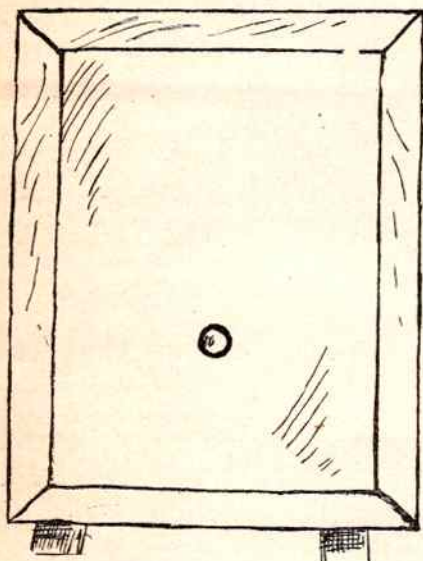


at very close range some one would generally get hurt. It is quite a different thing shooting at a target and shooting at a man who is also trying to take a pop at you. As a real good marksman the western gun fighter and bad man is greatly overrated. In a pistol fight he could give our modern target shots "cards and spades," but our up-to-date target and military shots could shoot "holes" all around the bad man out west when it comes to *real accurate* shooting with a revolver. There are numerous revolver clubs all over the country and the ranges

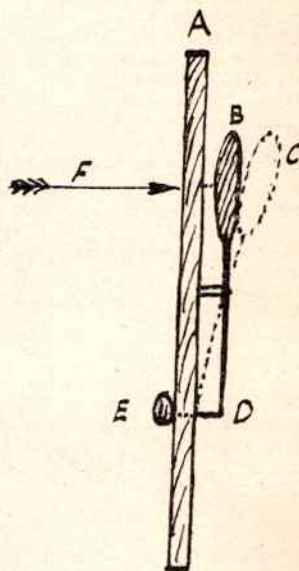
been done in connection with out-door rifle work mostly by the expert, and, like rifle shooting, at flying objects, with the pistol or revolver requires much practice, practically the same rules being followed as when using the rifle, the main point being to pull steady and get well under your target.

#### SOME STRAY SHOTS

Shoot with both eyes open.  
Don't forget to clean your rifle after shooting.  
Never use coal oil to clean your gun.



Front View



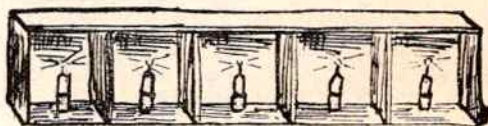
Side View

DIAGRAM OF STAGE FAKER'S TRICK PLATFORM

A—Platform; B—Steel disc and Rod; C—Position of steel disc when struck by bullet; D—Pin which breaks glass ball on target; E—Target on glass ball; F—Course of bullet going through partition striking steel disc.

are as a rule twenty to fifty yards, and although this kind of shooting has been practiced for years, it was left to Mr. C. C. Crossman of the St. Louis Revolver Club, to make the first "possible" or perfect score at twenty yards that has ever been made. He used for this shooting a Colt's New Service Revolver fitted with target sights and shot reduced ammunition. Most all the in-door revolver shots use reduced ammunition or gallery loads, loaded with round or conical bullets and black and smokeless powder. This ammunition is most accurate and more pleasant to shoot than the full charge. All target revolvers and pistols are fitted with adjustable target sights, but I have seen some very good scores made with regular sights. The most popular revolvers for target work are the 38 Smith & Wesson Special, 44 Smith & Wesson Prussian, 38 Colt's Officer Model, and 44 or 45 Colt's New Service. However, target shooters like other shooting cranks differ, and most every one has his own ideas as to trigger pull, grips, sights, etc., each man shooting what he thinks is the best combination. Of late fancy revolver shooting has

Every Winchester is tested at the factory.  
Don't jerk your trigger, pull steady.  
A loaded rifle barrel is not accurate.  
Don't leave your rifle standing about loaded.  
Some fool may think it empty.  
Quicksilver will sometimes take the lead out of a rifle barrel, but a better plan is to get a new rifle.



The Candle Box

Never try to shoot an obstruction, such as a rag or mud, out of your rifle. It will almost certainly bulge the barrel and ruin it forever.

Don't get discouraged if you are shooting bad, try it again, the chances are that you are shooting a great deal better than some other fellow.



If you love your rifle, never under any circumstances loan your gun or you may lose a friend.

Don't blame your rifle if you are shooting bad, sometimes it is the man behind.

Remember it is difficult to shoot towards the sun or light, turn the other way.

Examine your rifle sights once in a while by targeting your rifle at close range; they may get moved a bit and cause you many misses.

A gun or rifle which is very oily in the barrels will not shoot well, shoot out the oil with an extra shell, before starting your score.

On very bright days blacken your sights with ordinary shoe blacking, or smoke with a match.

Remember, practice alone can render a man proficient, backed up by close and studious observation. For weak eyes use a Lyman or Marble rear sight with large aperture.

In snap shooting at flying objects, thrown straight up in the air, always aim directly under; most of your misses will be high.

Don't get excited; wait until you get cooled down a bit, as you will only be wasting your ammunition.

You can't expect to hit marbles in the air all the time; use a larger object.

Glass bottles are dangerous when used as aerial targets, unless thrown high or straight away.

To get the best results use the ammunition intended for your rifle; if you are using a .22 caliber Winchester use Winchester make of cartridges.

When you shoot at an incoming target shoot just in front or ahead of it; don't let it come too close.

Shoot on an outgoing object as quickly as you can; get under it as it is dropping.

Don't use an iron rod, get one of brass or wood.

To become a good shot discover your mistakes—why you miss—and correct your errors.

Mercurial ointment will prevent your gun from getting rusty when near salt water.

Use smokeless powder ammunition; its cleaner than the black powder kind and costs only a trifle more.

Don't boast; your friends will know if you are a good shot.

Never use shot cartridges in your rifle; they will lead the barrel, and if you cannot shoot well enough to hit an object with a bullet use a shot gun.

The secret of being a good shot is first to correctly judge distance, second the speed of the object fired at, and third, pointing your rifle at the place where the object will be when the bullet gets there.

[THE END.]

## WANTED—A .22 AUTOMATIC PISTOL

By A. W. LOWDERMILK

[Editor's Note—For many years there has been a steady demand for a light, handy, high grade revolver to take the .22 caliber rimfire cartridge. The call was principally from the more intelligent group of shooters who wish to shoot a great deal but who have conscientious scruples against shooting their families into the poorhouse. The call for the .22 caliber revolver was met with a response by several armors. The Colt people put out a diminutive little toy, a pretty little weapon but wholly unsuited to the needs of a practical pistol shot. They next swung to the opposite extreme and gave the public a .22 caliber in a 45 single-action army frame. The tiny little cartridge did not work well in the ponderous frame on account of the escape of gas between the cylinder and the end of the barrel and imperfect combustion causing excessive fouling. I own one of the Colt 22-45 revolvers and since the smokeless .22 long rifle cartridges have come into general use I have used thousands of them in it, obtaining a poor degree of accuracy. The arm is much too heavy for comfort or to use for snap shooting. The Smith & Wesson people put out a dainty little .22 caliber revolver, fully up to their high standard of material and workmanship, but too light for the snap shot and of course possessing the inherent defect of all small caliber revolvers—loss of energy at the joint and imperfect combustion. The invention of the .22 caliber automatic Winchester smokeless and grease-

less cartridge and the Colt automatic pistol points the way to a solution of the problem of a practical .22 caliber repeating pistol of first class workmanship of undisputed accuracy and one that will fill a hitherto unoccupied panel in every sportsman's cabinet. Mr. A. W. Lowdermilk, who is known to every shooting man in America through his able articles on fire arms, has formally launched the boom for the new pistol and the Outer's Book stands sponsor for the movement. Mr. Lowdermilk and others who so eloquently championed the cause of the Haines Model will contribute drawings showing the outlines of the proposed model and description of the details of construction. The objections offered by the manufacturers against the Haines Model will not apply in this case as the automatic being already the accepted arm of the future, every thing done in the way of perfecting the new pistol will be applicable to the larger calibers. Mr. W. W. McQueen of Menominee, Michigan, first suggested the .22 auto pistol to me about three years ago and the idea seems to have spread through a sort of mental telegraphy. Future numbers of this journal will contain much of interest on the subject of the .22 pistol. Mr. Lowdermilk suggests that the new arm will be ideal for two handed and expert work of the snap shot and professional. Sensible and courteous discussion of the subject will be welcomed by this magazine. Let us have your opinion—R. A. K.



THE suggestion by Mr. W. E. Butt pertaining to the .22 auto-pistol together with your comment on same strikes me in just the right place. An auto-pistol having a barrel five to six inches in length, to handle the .22 rimfire cartridge, is much in demand and the first manufacturer in the field will meet a ready market. Providing, of course, that its lines are practical, such a weapon would displace thousands of .22 S. & W. single shot pistols now in use and its advent into shooting circles would do more to create active interest in, and also more to demonstrate the possibilities of, the auto-pistol, than any other one thing. Much of the prejudice now existing against the auto-pistol, in general, comes through the fact that a sufficiently comfortable grip has not been applied to it. As an accurate fast-shooting weapon, *on the class of targets its field embraces*, its effectiveness hinges closely around this one point. The principles of grip as related to the revolver must always remain a compromise, by reason of the revolver's bulky cylinder throwing the hand into a somewhat awkward position, but in the auto-pistol the anatomical position of the hand renders possible, a grip, embodying, without friction, every principle which aids the aiming process and which enables the shooter to maintain perfect control of the barrel. As the auto-pistol is clearly to be the arm of the future, the refinement of those points, which in its present stage of development prohibit its general adoption and which limit its practicability as a weapon, are by no means unworthy of the manufacturer's careful consideration.

It is through intelligent criticism that many such points are brought to light and your remark in a recent issue to the effect that the handle of most of the auto-pistols submitted, seemed to you to have been built as a cartridge magazine and conforming to the demands of it, rather than to the peculiarities

of the shooter's hand, was but one of the many instances which show your fine discrimination and delicious style of handling truth. For sometime past I have busied myself with fashioning models of the auto-pistol with a view to showing myself that the grip could be perfected without deviating from the principles of mechanism already established, with the result that I am now not only sure of this but equally confident that the auto-pistol in a perfected state presents the only solution to the grip problem. Now in putting this matter of a .22 rimfire pistol before the manufacturer, bearing in mind the character of its many uses and the desirability of having the weapon conform to them, would it not be a good idea for those of us who are sufficiently interested, to get together on the main points similar to the manner we handled the "Haines Model?" I am inclined to think such a design or model could be created with comparatively little effort, that would meet the approval of the representative marksman and by submitting such a design to the manufacturer our chances of getting action taken on it would be much better than was the case with our previous effort. As for myself, as is usual with all gun cranks, it would be a labor of love and my enthusiastic nature would lend itself readily to the furthering of anything of this nature, offering as it does to all shooters so many new and interesting variations to our regular practice. It would be a great disappointment to me if the manufacturer producing this weapon made of it another vest pocket affair, and I believe a little agitation of the subject, enough at least to show clearly the type of gun desired, would be a good and wise plan to follow. However, for all this, I leave the matter entirely in your hands, feeling sure that whatever action you eventually take will be right and for the best interests of the shooting fraternity.

## BRITISH RIFLEMEN SUPERIOR

THE superiority of the riflemen of Great Britain on the gallery range has just been demonstrated by the victory of the British team in the International Small Bore Match just ended. When the American rifle team was in England last summer taking part in the shooting contests of the Olympic Games, General James A. Drain, President of the National Rifle Association and captain of the team was approached by the secretary of the Society of Miniature Rifle Clubs of Great Britain with a proposition to hold a friendly international match with small bore rifles on gallery ranges, the match to be shot on targets issued by the British Association to be signed by the respective associations and interchanged, the results to be cabled. The conditions of the match were 50 men on a side, each man firing 30 shots at 75 feet on a target having a one-half inch counting bulls-eye, counting 10 points, and a one-inch sighting bull, counting nine, and eight concentric circles of one-quarter of an inch apart, counting from eight to one, the rifle used not to be over .230 caliber. Any sights were allowed not

containing glass and any position could be assumed in firing. A business firm in England presented a trophy which will be held by the country winning it for one year, or until the next contest, and each member of both teams are to receive a medal commemorative of the event. After the conditions were decided upon, Australia asked to be allowed to come into the contest, which was agreed to by both the United States and Great Britain, thus making it a three cornered match. A cable has been received from the British Association announcing the fact that their team had made the grand total of 14,583 points of a possible 15,000 or an average of 291 per man. The scores of the American team were 14,179, showing that we were beaten by 404 points or 8 points per man. Australia has not yet been heard from, but it is hardly probable that their scores will equal those of the British team. In view of the fact that the American team was made up of some of the best known experts of this country it is hard to explain why we are so inferior to our British cousins in this style of shooting.



# THE KRAG-JENKINS SPORTING RIFLE

CALIBER .30 GOVT. MODEL, 1909

By PAUL B. JENKINS

[Editor's Note.—Every genuine gun crank who has been educated to appreciate utility, symmetry, and rare beauty of workmanship in a fire arm, will know just how I felt when a few days ago I was permitted to handle the beautiful converted Krag, so fitly and eloquently described by its enthusiastic designer. When I first received the weapon from its owner's hands I was surprised at its exquisite balance. Although weighing nearly seven and one-half pounds, it has the buoyancy and feel of a much lighter weapon. The weight of the mechanism, the necessary thickness of breech, the magazine and its load are all located between the points of support when the arm is held in position at the shoulder, off-hand, or while shooting from a prone

position. While handling and admiring this beautiful weapon one almost forgets his bias in favor of, or against any particular type of arm. It makes little difference whether it is actuated by a bolt, a lever or a crank. "The gun is the thing," and one almost feels a sense of joint ownership in the pleasure of examination. The work of transformation was done by Steve Meunier of the John Meunier Gun Company, and after studying the Krag-Jenkins thoroughly it is easy to understand that the detail of outline and finish represents over forty years' experience at the gun smith's bench. It is safe to predict that those who are so fortunate as to see Mr. Jenkins' latest convert will at once try and pick up a Krag and have a duplicate made.—R. A. K.]

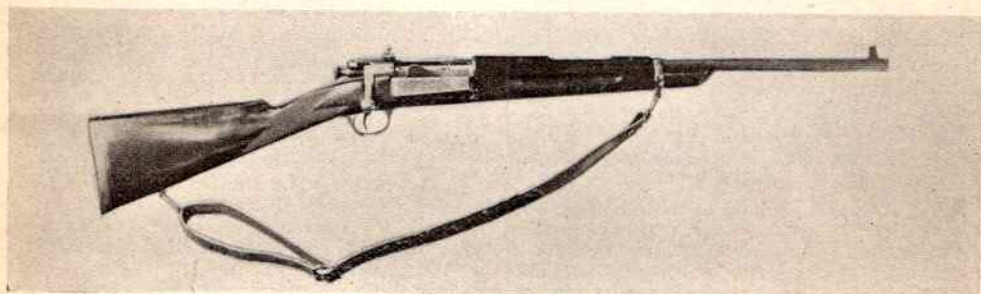
IF that title for the arm shown in the accompanying photographs is a rather formidable name, several other equally unique designations have been suggested for it. The owner was for calling it the Krag-Meunier, in honor to the skill of the man who did the work on it. Mr. Bodenbach, whom everybody in Milwaukee knows, "over at Meunier's" gave it the above name, after the compiler of the ideas it embodies. But if it were named after the English fashion, by stringing together the names of the men whose ideas it embodies, like the Rigby-Banks-Mausers, it would have a formidable cognomen indeed. For the fact is that it unites in one arm the leading features suggested in the recent writings of Lieutenant Whelen, Horace Kephart, Mr. Crossman and Walter Winans, while Mr. Robert Kane says that it is exactly the kind of American-made sporting rifle that he has been advocating for years. And when it was exhibited in the office of the Outer's Book, Dan B. Starkey, editor, said to the writer: "Now you write us the full story of how you came to produce it, so that our readers can see just what is possible in the way of a purely American-made, bolt-action sporting rifle." So this is the story: Early in the fall of 1908 the writer was "in the market" for a rifle which should come as near as possible to the longed-for ideal combination of both a perfectly practicable hunting-arm and a target-weapon of which the user need not be ashamed. Having fired pretty nearly all the varieties that have been made in the past thirty years, and read all the gun-books and magazines that have been printed, and thumbed all the catalogues, he was naturally unable to reach a decision. In this frame of mind he happened upon Lieutenant Whelen's notable series of articles on the subject, read his eulogy on the possibilities of the Krag-Jorgensen cavalry-carbine for conversion into the "ideal all-around American rifle," and went after one straightway. It was not "in hand" the next day, however—

Uncle Sam doesn't do things that way!—but membership in the National Rifle Association (blessings on the man who invented that solace for the gun-aching civilian heart!) proved the open sesame, and finally, by freight, came the gun. And then we went at it. The first thing done was to lighten the trigger-pull and eliminate the "drag," which was done by the insertion of an adjustable set-screw, instead of by Dr. Hudson's nevertheless excellent and more commonly practiced suggestion of a bit of steel hack-saw blade clamped under the trigger-guard. Either will do the work, of course, and the screw has no greater arguments in its favor than that it is entirely invisible and so perhaps a little more "ship-shape" generally. The wood-work was then begun on, and the stock was first trimmed down and re-shaped to almost exactly the lines and dimensions of a Parker straight-grip shotgun, which we used as a model. There is ample material for a good deal of this trimming-down on the Krag stock, as when it is made for purely military purposes and handling it is quite thick and bulky. Both the grip and the under-side of the fore-end or hand-grasp were then checked deeply. The photographs will give an idea of the quality of this work. The entire wood-work was then treated with filler and hand-rubbed to the smooth, dull gloss of what is sometimes called the "London finish," in contrast to the shiny appearance of a varnished surface. The result was quite a revelation to those who had seen the gun before this treatment, and many who have seen it since have inquired where we secured so perfect a piece of walnut, under the impression that a special stock was made for the arm, whereas the truth is that it is the original government wood, treated as described. As the owner is a bit long in the arms and the stock was a trifle short for perfect handling, it was lengthened—to say nothing of other advantages—by the addition of an English "Silver's recoil-pad," the original steel butt-plate being removed for this



purpose except the portion just on the top or heel of the butt. (It ought to be said, perhaps, that except for this advisability of a trifle more length, the steel plate would not have been superseded, as it is certainly the best of all materials for strength and wear just where both are needed). Blued screw-eyes for the hooks of one of the easily-removable Winchester gun slings were then inserted, one in the under-edge of the butt, and one in the band that holds the barrel to the fore-end, and the

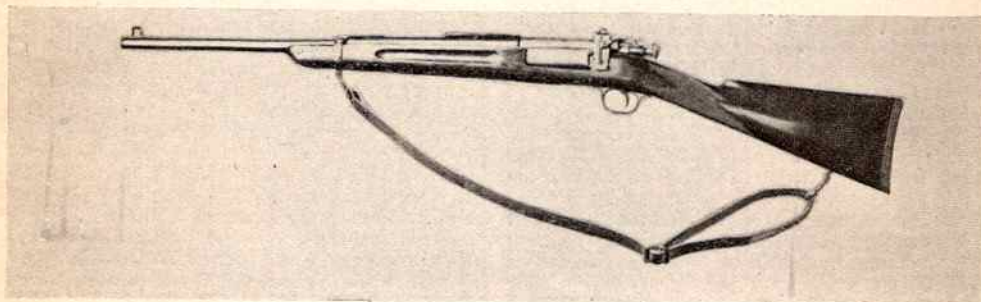
sight needs but to be seen to be fallen in love with at once! It looks elaborate but is really very simple, is quickly adjustable for elevation and tightly locked when set, has a point-blank stop to prevent its being accidentally set too low, the wind-gauge setting is as fine and accurate as watch-work, and it has both large and small apertures, either of which is usable with both eyes open. The corresponding ivory-bead, front-sight blade was inserted in the original slotted sight-stud and wound-up the im-



THE KRAG-JENKINS—RIGHT HAND VIEW

sling was attached. Then we went at the sight problem. Everything that might do, old or new, was studied, and there are several that would do, especially if the future user is familiar with them and likes their style. But at last the old reliable Lyman make that is on all the owner's other rifles was chosen, and their new rear-sight of the wind-gauge pattern made especially for the Krag (No. 34) was sent for. But weren't they reluctant to send it! (That is, instead of having the gun sent to them to

provements, and the "only and original" gun of its precise kind, so far as the writer knows or can hear, was done at last. One or two comments on the completed arm may be of interest. As the photographs show, the original and excellent Buffington improved military rear-sight, probably the best in the world for purely military purposes, has been removed, and the opening left in the upper half of the wooden barrel-cover has not yet been filled in. The best way to do this would be to have a new piece of wood



THE KRAG-JENKINS—LEFT HAND VIEW

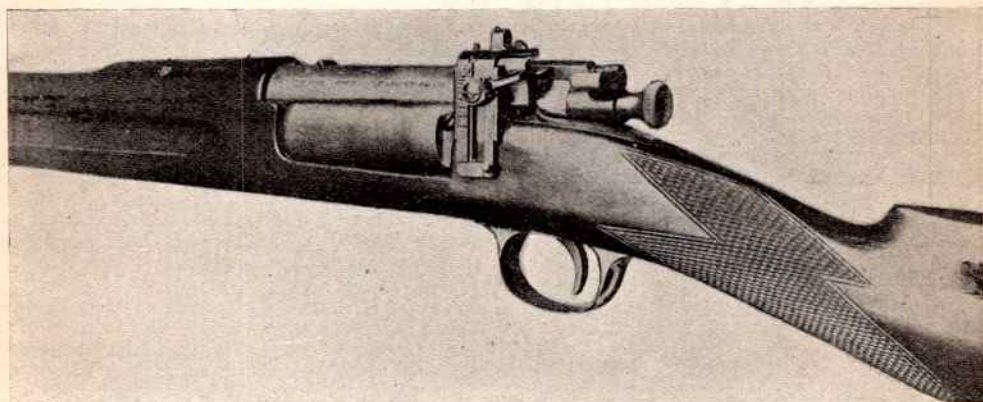
be fitted). True, they have a great reputation for good work and accurate sights to maintain, and so may be pardoned (and pitied) for not knowing what kind of work the man in whose hands the gun was could do. It is also true that it is no task for any amateur gun-smith to put on one of these elaborate rear-sights, for the block or base of the sight attaches to the metal of the receiver at a particular spot, and a very small piece of the stock must be cut out to receive it. But when it was done—that rear-

made, with no opening in it, which is to be done for this gun for hunting use, as the opening would be very bad in snow, rain, etc. As it now stands, the military sight can be readily replaced with no more trouble than the insertion of its screws. While examining the gun we early discovered that it had been "throated" in the making, which we did not know to have been the government custom in the Krag, and we are informed that only the later models were so treated. It is so well done that in



firing for experimental purposes a hundred and fifty rounds of S. & W. 32s, with a Winchester "supplemental chamber," which Dr. Hudson says is sure to lead the rifling, not the slightest trace of such leading occurred—and incidentally these little loads do very nice work at short or gallery distances. Two excellent points for practical purposes, the Krag action has which a great many foreign-made high-class, bolt-action sporting rifles have not. One is the fact that the very simple safety-lock will not only lock the firing-pin when cocked, but will also lock the firing-pin against cocking and the gun against opening when desired. The gun can thus be made safe not only when loaded and cocked, but it can be fastened against being easily opened by

weighs seven pounds seven ounces. It has a balance that must be felt to be appreciated, coming up to the shoulder like the finest shot-gun. It has a capacity of six shots, one in the barrel and five in the magazine. It does not load with a clip, but the cartridges are easily poured from the hand into the opened magazine box. I have never had one jam, and it can be instantly emptied without having to pump the loads out one by one as in some box-magazine arms. The bolt is quickly removable, making inspection and cleaning from the rear perfectly possible. It is indisputable that the bolt-system is not as quick as a lever-action repeater, but one who is used to it can operate it with great rapidity and ease, many soldiers, hunters and other



SHOWING LYMAN SIGHT AND TREATMENT OF THE STOCK, GRIP, ETC.

the chap who picks it up and wants "to see how it works," while it is also proof against the bolt being jerked open by branches catching under the bolt-handle when hunting in heavy woods, a not uncommon trouble with other bolt-actions. The Krag, as every user of one knows, has also a knurled cocking-knob, which allows the firing-pin to be cocked or let down again with the finger and thumb. Many otherwise excellent foreign rifles have no cocking-piece at all, and can be cocked only by working the bolt-handle, which is the case with the Sauer-Mauser, some Mannlichers and (I think) the big Peterlongo 11 mm. Mauser. The Mannlicher-Schoenauer, however, has such a knob. The Krag, as here described, unloaded and without sling,

users of the bolt-system "working" it while at the shoulder. Lastly, the processes of treatment of this rifle as here mentioned were interrupted, last fall, long enough to take it into the "big woods" in the deer-season, when it dropped its buck, running, dead in his tracks with a single shot. And what did it all cost? The gun as here shown, complete, sights, hand-work and all, cost *just about one-half* of what it costs to buy in this country an imported bolt-action sporting rifle of a similar grade! How long will it be before some American manufacturer has the foresight (no pun intended) to put on the market a rifle of this type for the Americans who now have to go through all this to get one?

### To Our Experimenting Readers :

Mr. Jenkins, in his very interesting description of his remodeled Krag, has set an example worthy of emulation. You were interested in what he did; he, and thousands of others, would be interested in what you may have done. Please give us and them the benefit of your experiments. So long as you keep it to yourself any improvement you may have wrought benefits only yourself, whereas when you tell about it the whole shooting world is benefited. Very much of the wonderful improvement in fire arms has come through the efforts of men like Mr. Jenkins, who, carrying out their own ideas, have shown the manufacturers how to make better arms. The columns of this department will always be open to new ideas, however slight the improvement they may suggest.—R. A. K.



# THE BOLT vs. THE LEVER ACTION

## III.—DURABILITY AND CONVENIENCE

By EDWARD C. CROSSMAN

A BURSTED primer has no terrors for the shooter of a modern bolt action. Bursted primers do not occur very often and they usually happen from a tremendous overload, but when they do occur, they are likely to play hob with the man behind. The Mauser or the Springfield takes care of the blown out primer, as it takes care of every other emergency in the shooting line that a rifle can take care of. A little hole is bored in the extractor which corresponds with another hole out through the side of the receiver and the gases are promptly herded out through these openings before they have time to look around and discover the best place to start in with their tear-up game. And as the breech pressure of the new Springfield Model 1906 cartridge is something like 50,000 pounds and the other cartridges for the Mauser not far under these figures, it is easy to see that there is gas to spare when this tremendous load is ignited.

The head of the Mauser or Mannlicher or New Springfield, bolt, enters the covered-over receiver an inch or more and this close fitting bolt, covered up with an inch of receiver, tends to keep all the disturbance and gases and bits of primer and other undesirable things, inside the chamber, although with our lever action with the head of the cartridge almost in sight when it is fired, it does not always prevent these stray bits of unpleasantness from coming back along the bolt if a shell should happen to burst around the head or a primer give up the ghost. The writer remembers well a lever action .22 calibre repeater with a solid top which used to spit burnt powder and smoke and gases back into his face with monotonous regularity, along this bolt, despite the solid top. The chamber of the rifle was burnt and allowed the gas to come back along the shells but the thought occurred to him more than once, if a little weak .22 would do this, what would happen if a high power charge should get away with the head of a cartridge with a bolt of this description.

The cartridge of the bolt action is supported solidly by the bolt, locked firmly to the receiver immediately to the rear of the cartridge and no play can take place. The bolt action is operated by cams, it is cocked by cams, the cartridge is seated by cams and the empty shell is started from its chamber by cams. No idea can be gained by using a bolt action, of the power exerted by these cams on the bolt, but it is a fact that no shell ever refused to come out, once the extractor of the bolt action got a firm grip on its collar and said "come." You are pulling up on the bolt handle with an easy motion and hardly realize the grim death struggle that is going on inside the chamber between the

extractor and the balky shell, but the extractor invariably comes up smiling with the refractory shell, in spite of all its efforts, something that is not always true with the lever action and the weak backward pull of the lever extractor. The writer has seen a man take a lever action rifle and holding the rifle between his knees, yank with all his strength at the lever, trying to start some swelled shell from the chamber. In his own experience he has had the extractor of a lever action rifle cut nicely through the brass rim of the shell and leave the cartridge in the rifle. There is no such thing as a divorce between the fired shell and the extractor of a rifle like the Mannlicher, or Mauser or New Springfield, until both parties reach old Judge Ejector at the rear of the rifle. The big extractor hook settles down over the rim of the headless shell and stays there like a bulldog attached to the bosom of your best trousers until the shell is taken back and kicked out of the locality by the vicious ejector. We might stop to look at the ejector just a minute.

This ejector on a bolt action is an educated animal. The empty cartridge case is not fired viciously at your head but it is quietly and swiftly fired out sideways so far away that you would not step on it if you walked around for half an hour. Once in a while the lever action ejector will lie down on the job and the empty shell will join the loaded cartridge and try to climb back into the chamber with it. The old axiom "Two bodies cannot occupy the same space at the same time" interferes at this stage, while the mule deer grins at you over his shoulder and departs to keep an engagement a hundred miles hence.

When we come to the standpoint of durability, there is but one thing to say. The lever action will last quite a while but bolt will last longer. The entire absence of small and weak parts, the care used in the selection of materials and their preparation for the few wearing parts on a bolt action rifle are prima facie evidence that the bolt will outlast the lever action, even though both rifles were made with the same care, which is not true. If one will compare an Old Krag and a lever action that has received the same treatment—although very few of the lever action rifles would be in existence if man-handed like an ordinary Krag—the question will need no further reply.

For cleaning, the bolt of the military action slides out to the rear, leaving the barrel free and ready for cleaning or inspection. This in itself is a tremendous advantage to the man who cares for a rifle as though he expect to have it the next season or even longer. About the greatest advantage which our American lever actions possess is cheapness and that they are wonderfully cheap cannot



be denied. Their manufacture at a profit at their present prices is a wonderfully strong testimonial to Yankee up-to-date methods of doing business and for the price, the rifle is very well made. A good lever action to handle an ordinary hunting cartridge like the 30-30 will only subtract some sixteen ducats from the purchaser's bank roll. A box magazine rifle to handle the more powerful cartridges will cost about \$25.00. In the columns of our leading sporting magazines is advertised a foreign rifle that sells for \$75.00, rather a difference. If you go to the right-little, tight-little Isle for your shooting iron you can very easily spend \$300.00 and get nothing but lock stock and barrel, although it would be a very fine lock stock and barrel. If you should go to an English gun maker and offer him \$15.00 for a new modern up-to-date hunting rifle for the modern cartridges, the fourth assistant office boy would lead the "Blawsted Yankee" out of the shop by the ear and turn him over to the police as being "Queer, don't you know."

But supposing that you are a genuine rifle crank—and you are, when you come to think about it—and want a rifle that is better made than the \$15.00 article, commonly sold in this country? What are you going to do about it? You can have a very superior sort of engraving put on the outside of the arm and you can get some very nice stocks if you pay enough for them, but will the inside be any better or different? Nay, nay, the inside is made by machinery and that particular machine is too busy to listen to you even though you jingle gold in its ear. The \$15.00 article is open to improvement in both the making of its parts and their finish but all your money over this \$15.00 goes on the outside that does not matter and not in the inside that does. It is very possible that you cannot afford to own such a weapon, but if you are a shotgun crank you cannot deny that you would like very much to afford a fine shotgun with perhaps \$300.00 tied up in its shining barrels and beautiful lines. You know that you would find the "Shoot" and the wearing qualities there that you could not get for \$15.00. Then why cavil at paying a good price for a weapon of precision which requires just as much care in its manufacture as a shotgun? You would not expect to get much of a shotgun for \$15.00 would you? And yet you will buy a rifle for \$15.00 and expect to get perfect satisfaction. The item of cheapness in favor of the American lever action rifle is hardly much of argument after all, unless the price of the cheapest one is all that can be gotten together, but as a rule, the average man who will pay \$15.00 for his rifle to take on a deer hunt, will just as cheerfully pay \$150.00 for the gun to take into his duck blind. They do things differently in the lands across the water—and they have better hunting rifles, too.

American manufacturers can make as good a rifle as anyone else in the world—but they don't, outside our Springfield and Rock Island arsenals. It is regrettable but it is true that to get a "Fine" rifle, one that has received the same painstaking care that is bestowed on a fine shotgun, we must go across the water at present. The only choice we have is our \$15.00 rifle, with or without the

flub-dubbey on the outside. With every dollar we put into a shotgun, we get out that much better workmanship, better shooting, better wearing qualities and more satisfaction and it is equally true as regards the rifle—when the extra dollars are put into RIFLE and not into gold dogs, engraved leaves, etc., even these do appear to some extent in our fine shotguns. The bolt action is the superior of the lever action in its primary principles and as made by the foreign makers it is better in its application. Our manufacturers can make as good arms as the foreign rifle makers but *they don't*. This same short-sighted policy, the same idea that cries ever for speed and not for care in the making of rifles, has tolerated the old actions which were all right when they came out, but which have been proven time and time again to be inferior in every point—except cheapness, to the modern bolt action.

It has been urged by some people that the lever action can be handled quicker than the bolt action. This is undoubtedly true, if the user is accustomed to the lever action and makes the change to the bolt later. To a person who has handled neither one, there will appear to be very little difference and he will handle his bolt action as quickly as the man with the lever, provided they both have used the rifle the same length of time. For light cartridges like the .22 or the 25-20 or the 32-20 the lever action can be handled with marvelous speed by an expert but the difference in the number of shots fired from the two styles of rifles at the end of twenty minutes continuous firing will be greatly in favor of the clip-loading bolt action and there will be but little difference in the number of aimed shots fired from the two rifles in a given time. An automatic places the second shot in position for firing a little more quickly than either the bolt or the lever, yet there are quite a few of the bolt and lever actions sold every day, in spite of this slight difference in speed in favor of the automatic. From one-half to one second will place the second shot with the bolt gun at your disposal. No greater speed is necessary. Certainly the bolt action is not inferior in speed to the terribly long throw of the box magazine lever action rifle.

As the lever action is American and the bolt action is foreign there may be some patriotism entering into the equation, but barring all considerations excepting excellence of action and price, the bolt action will win out on every point, excepting that of cheapness. And if you happen to be out on Labrador or in the wilds of British Columbia and a shell jams with that silver-tip only thirty feet away or the empty shell refuses to come out of the chamber, or the double-acting, compound thingumbob somewhere in the depths of the action breaks at the critical moment, or if you drop that rifle in the muddy edge of the stream and find the receiver full of dirt and game close by, or if you happen to see a bolt blow out and scar a friend's face for life, or if about the time you get used to the rifle and get it sighted to your satisfaction, you find that it is shot out and worthless, you may sit down and have a talk with yourself as to whether or not even this item of cheapness will have as much weight with you when you get your next rifle.

[THE END.]



# THE LEVER vs. THE BOLT ACTION

## A CRITICISM OF A COMPARISON

### PART I

By CHARLES NEWTON

I READ with great interest an article by Edward C. Crossman in the May and June numbers of the *Outer's Book* on the subject of bolt action rifles as compared with those actuated by the lever, and the article left our old friends, the Winchester, Marlin and Savage rifles in such a battered up, stamped in, and generally demoralized condition that sympathy for the under dog leads me to say a word in their defence, therefore I will examine the articles somewhat. The first proposition advanced is that the American people are creatures of habit and like to purchase goods of standard quality and by reliable makers. Guilty. They are then charged with a "strange dislike to try new things" which is "about the only explanation that can be found for the constant popularity and demand for rifles equipped with the old makeshift lever action." In other words 79,999,999 obstinate people utterly refuse to grasp with open arms at the bolt action which has, by the remainder of our 80,000,000 people been "recognized as the strongest,

action rifles on both sides. Hence the bolt action is nearly old enough to vote. This leaves as the new thing the box magazine, which was put out in its perfected form by the Remington Company under Lee's patent granted about 1879, and is consequently thirty years old. Certainly long enough to become acquainted. If any claim of novelty is made for the combination of the bolt action with the box magazine and the rifled barrel, this same old Remington-Lee combined all three points thirty years ago and has been consistently rejected as a sporting weapon by the American public ever since. Nor was this rejection because of inferiority in material or workmanship in the weapon or lack of standing of the manufacturers since no firearm makers, either American or foreign, are better or more favorably known, the world over, than the Remingtons, and everywhere their goods are considered to, and do, represent the highest degree of perfection in both material and workmanship. From the production of the first Remington-Lee



MODEL 1886 WINCHESTER

simplest and least liable to trouble of all actions made." Which reminds us at times of the eleven obstinate jurymen. I think a fair inference from the article in question is that the new thing which the obstinate majority so coldly refuse is the bolt action box magazine rifle, and I will so consider it. In passing, however, I will observe that all our repeaters are bolt actions, the bolt being actuated in some by means of a lever beneath the arm and in others by a handle on the side. The correspondent evidently classes the former as lever actions and the latter as bolt actions, therefore I will so speak of them, merely calling attention to this point to avoid being charged later with inconsistency in speaking of the *bolt* of a lever action rifle. As to the bolt action box magazine rifle being a new thing, I think the spirally grooved bore is sufficiently old to avoid the charge of novelty. As to the bolt action being a new thing, the oldest one in my collection is a Lamson carbine stamped 1865, while the Franco-German war was fought in 1870 with bolt

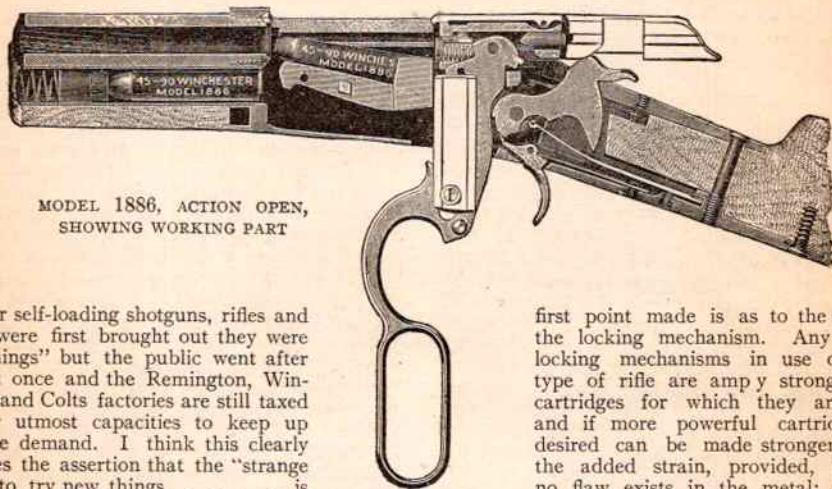
rifle until the last, which was within the last three or four years, their models have been kept strictly up to date and the equal or superior of contemporaneous rifles made abroad and yet, after thirty years of trial the American public has pronounced against them as a sporting rifle *because they are of bolt action, box magazine type and for no other reason*, and their manufacture has been discontinued. The Hotchkiss, another bolt action repeater brought out by the Winchester Company at about the same time, met a similar fate. The two greatest rifle factories in America having thus tried to popularize the bolt action and both having signally failed in spite of the prestige of their names and reputations indicates that the people as a whole, and they are the American's court of last resort, have decided in favor of the lever action with practical unanimity.

Having thus endeavored to demonstrate that the rejection of the bolt action rifle by the American public was not because it was a "new thing," I assert that this same American public *does not*



eschew things because they are new. In the early 90's the Savage Arms Company placed on the market a hammerless rifle with revolving magazine, a radical departure from anything then in use. The company had no established reputation to back its goods, but it made good goods, the public tried them, approved them at once and today the Savage is one of the most popular of sporting rifles, although but recently a "new thing." When the semi-auto-

Furthermore I have had missfires with both Krag and New Springfield due to not pressing the handle quite down when closing the action in firing rapidly, thus allowing the moving part of the bolt to catch on the cam and divert the power of the mainspring to closing the action instead of exploding the primer. I have had no such trouble with the lever action. The next comparison made between the two types of rifles is as to safety and the



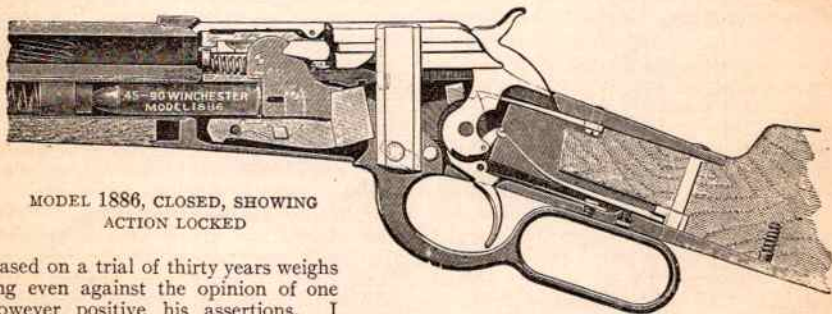
MODEL 1886, ACTION OPEN,  
SHOWING WORKING PART

matic or self-loading shotguns, rifles and pistols were first brought out they were "new things" but the public went after them at once and the Remington, Winchester and Colts factories are still taxed to their utmost capacities to keep up with the demand. I think this clearly disproves the assertion that the "strange dislike to try new things . . . is about the only explanation that can be found for the constant popularity and demand for rifles equipped with the old makeshift lever action. The next indictment against the lever action is that it jams at times. The writer has used several rifles of this type without encountering this trouble, and has never met any one who claims to have been troubled in this way, but he also owns a Krag and a New Springfield and both fail to repeat at times owing to the cartridges not feeding in from the magazine, while the cutoff was set for magazine fire. Therefore I think the verdict of the American

first point made is as to the safety of the locking mechanism. Any of the locking mechanisms in use on either type of rifle are amply strong for the cartridges for which they are made, and if more powerful cartridges are desired can be made stronger to meet the added strain, provided, however, no flaw exists in the metal; therefore the question of safety of locking must

be examined from the view point of a possible flaw in the steel. The highest type of bolt action, from the standpoint of strength of locking mechanism, is that having the double locking lugs at the head of the bolt, while in the lever actions the most perfect type is the model 1886 Winchester.

Considering the New Springfield as a sample of the bolt action type of weapon we find it would be necessary in order to force back the bolt, to sheer off the locking lugs which are each  $\frac{3}{4}$ -inch square; this would let the strain back upon a safety shoulder



MODEL 1886, CLOSED, SHOWING  
ACTION LOCKED

public based on a trial of thirty years weighs something even against the opinion of one man, however positive his assertions. I agree with Mr. Crossman as to the annoyance which might be caused by a rifle becoming jammed at a critical time, but think if such experiences were at all frequent the inexplicable popularity of the lever action repeater would suffer therefrom. Practically all the cases of "jamming" I ever heard of happened between the time the Marlin Company stopped advertising in a certain magazine and the demise of that magazine.

about  $\frac{3}{4}$ -inch which would strike a point of the receiver about 1-16 inch thick, and which while it might save the day in case of a break is not very strong. In case of the model 1886 Winchester the bolt in this rifle is held in place by two locking bolts of hardened steel of the finest quality crossing the bolt at right angles and embedded one-half in the receiver and one-half in the bolt and taking the



strain edgewise. These locking bolts are  $\frac{1}{4}$  inch wide,  $\frac{1}{4}$  inch thick and the depth of the bolt is about  $\frac{1}{4}$  inch, therefore before the bolt can be forced back both locking bolts must be sheared through edgewise their entire width to a depth of  $\frac{1}{4}$  inch and from the center line of the bolt to the inside. Therefore the sheared surface would be  $\frac{1}{4}$  inch by  $\frac{1}{4}$  inch or 21-32 of a square inch for each bolt or 1 3-10 square inches of sheared surface. On the other hand with the New Springfield the sheared surface would be  $\frac{3}{8}$  inch by  $\frac{3}{8}$  inch by 2 or about 2-7 square inch of sheared surface. One steel is as hard, sound and tough as the other, consequently the relative strength of the two locking mechanisms are as 2-7 to 1 3-10, or about as one to five in favor of the Winchester. True, the New Springfield has a safety stop consisting of a shoulder on the bolt opposed to a shell of the receiver less than  $\frac{1}{4}$  inch thick by  $1\frac{1}{4}$  inches long giving, in case it did not spring out to the side and let the bolt shoulder past, 5-32 of a square inch of surface to shear to let the bolt back and making a total of sheared surface for the bolt action of 7-16 of a square inch or just  $\frac{1}{4}$  of the strength of the Winchester. Considering these actions from the standpoint of a possible flaw, with the bolt action the entire locking is done with a single piece of steel and this piece of steel may contain a flaw and may not, and the flaw might be variously disposed so as to cause either one or both locking lugs to let go in which case only the thin shell of the side of the receiver opposed to the safety shoulder interposes between the shooter's head and trouble, and this might easily spring aside under strain and let the safety shoulder pass. On the other hand a flaw in the locking bolt of the model 1886 Winchester would be immaterial since one

locking bolt can be removed and the other which remains will be ample to stand the strain. From this it follows as a natural consequence that before the model 1886 Winchester could blow back there must not only exist a flaw but this flaw must be in the exact center of the locking bolt and passing through it edgewise maintaining its proper alignment, otherwise it does not affect the strength of the bolt, and further, as similar flaws must exist in both bolts which are made from entirely separate and distinct pieces of steel, not only are the chances of a flaw, if one existed, being so located as to weaken the bolt infinitely remote but the chances of two separate pieces of steel each having a flaw so carefully located as to weaken the bolt and of both those pieces being assembled in the same rifle so far more remote as to render danger from this source practically impossible. Therefore we see that not only is the locking device of the 1886 Winchester about three times as strong as that of the New Springfield but the chances of trouble from a flaw in the locking parts are far more remote owing to the use of two separate pieces of steel, either of which is alone sufficient to perform the office. Mr. Crossman says: "Bolts have blown out and shooters have been killed with this sort of locking apparatus." When and where? I have known of an 1886 Winchester being fired with the 38-70 shell full of sharpshooters powder and a 255 grain metal cased bullet, but both locking bolts and receiver still go to the woods after moose, and, strange to say, with the firer, but some other parts of the rifle were left behind. The only case of a bolt blowing out which ever came to my notice was reported recently by Lieut. Townsend Whelen, and this was blown from a Krag, which is a bolt action, box magazine rifle

[TO BE CONCLUDED].

*Continued on page 25*

## ANSWERS TO CORRESPONDENTS

EDITOR GUN DEPARTMENT: Having been an interested reader of the Outer's Book, and more especially the Gun and Ammunition Department, I feel free to ask you a few questions pertaining to your department. I wish for some information in regard to foreign made automatic pistols and rifles. Could you please inform me where I could obtain catalogs containing full detailed description of all foreign made automatic pistols, such as the Mauser or Luger, etc., giving the different calibers in which they are now made. Will you kindly also inform me where I can procure catalogs of the Mannlicher and other foreign bolt action rifles? Figuring that the Mauser automatic pistol or carbine with a 5 $\frac{1}{2}$ -inch barrel is sighted up to five hundred and one thousand yards, can accurate shooting be done with it at these ranges? Is the 25-35 auto-loading Remington rifle accurate at six hundred yards, and is the 30-30 auto-loading Remington accurate at one thousand yards? I have frequently heard the term "o'clock" used in connection with the marking of targets. I have so far been unable to understand what the term means. Will you kindly explain this and furnish the other desired information?

Yours truly,

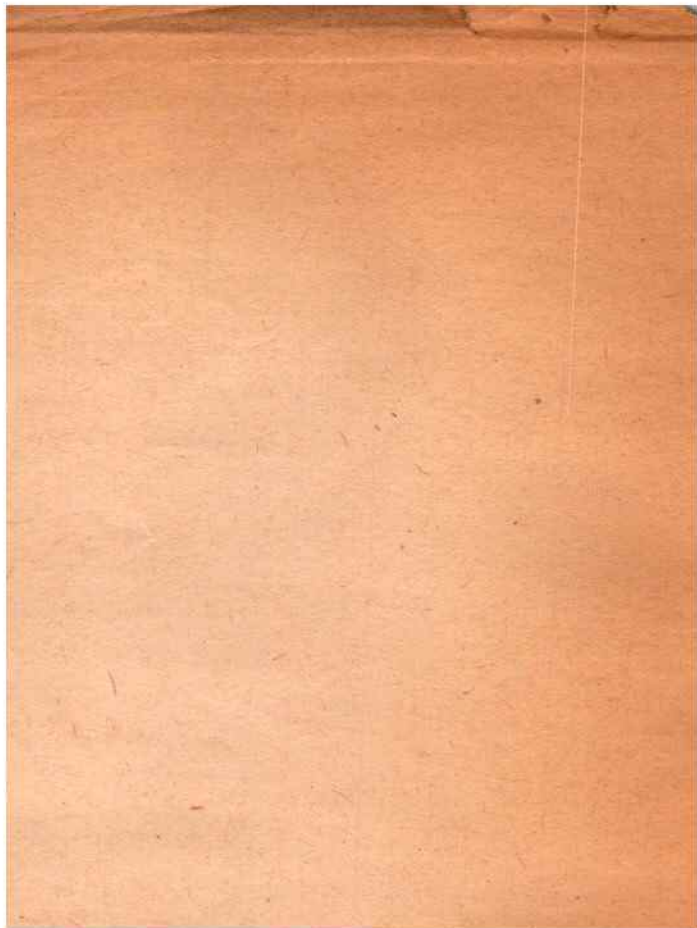
FLOYD J. FOWLS.

[You may procure catalogs of the Mauser automatic pistol and rifles from Von Lengerke & Detmold, 349 Fifth Avenue, New York, which will give you full and detailed description of these arms. H. Tauscher, 320 Broadway, New York, can furnish you with catalog of the Luger automatic repeating pistol and carbines, also of the Hoenel-Mannlicher rifle. Shoverling, Daly & Gales, 302 and 304 Broadway, New York, will, on request, send you their book of fine guns, giving cuts and detailed description of the Luger pistol and carbine, the Sauer-Mauser rifle and the Schilling-Mannlicher rifle. The Luger is made in two calibers, the 7.65 M M or 30 caliber, and the 9 M M or 38 caliber. The Luger and the Mauser are considered by shooting men to be the best of all the foreign made automatic pistols. Although sighted up to extreme ranges, these pistols can not be expected to show remarkable accuracy at 500 and 1000 yards. The rather short barrels render shooting extremely difficult. Under very favorable conditions these weapons in the hands of an expert would undoubtedly show some good scores at 500 yards or over. The pistol is a short range weapon and has a field peculiarly its own. Beyond this field it encroaches

Books in 1st  
letter? —

What can we use  
on them?

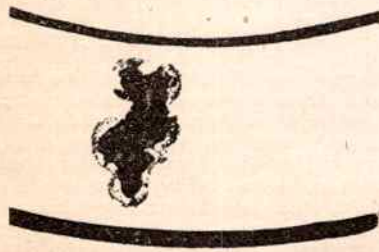




on the domain of the rifle, and as a matter of course it is heavily handicapped. You will find all of the Remington auto-loading rifles accurate. Neither rifles or cartridges were designed for long range work, but under favorable weather conditions, with fine target sights, an experienced long range marksman could do good work with the 25-35, the 30-30, or the 35 Remington auto-loader. The term "o'clock" as used by riflemen is descriptive, and has been in use for many years. It is used to locate quickly and accurately, the position of the shots on the target, and also the direction of the wind on the range. To illustrate: To every rifleman the target is an imaginary dial. With this system, assuming that you are using the Creedmore target, an imaginary line drawn through the center of the target vertically, would strike 12 o'clock at the top, and 6 o'clock at the bottom. A line drawn from left to right horizontally through the center of the target would touch 9 o'clock and 3 o'clock on the imaginary dial. The intersection of these lines in the exact center of the bullseye would, if struck by a bullet, indicate a perfect shot. A shot in the upper half of the bullseye on the vertical line would be termed a 12 o'clock bullseye. If on the lower half on the same line, it would be a 6 o'clock bullseye. If the bullet should strike to the right of the exact center on the horizontal line, it would be called 3 o'clock bullseye, and if to the left center on the same line, it would be a 9 o'clock bullseye. Occurring in the other divisions of the target, the shot would be described in a similar manner, a 6 o'clock, 4, or 9 o'clock 3, as the case may be. Shots on intermediate lines radiating from the center to other figures on the dial are described in a like manner. To describe the direction of the wind, on the rifle range it is treated in exactly the same way. A 12 o'clock wind is one blowing direct from the target. A 6 o'clock wind is one blowing square against the face of the target. A 3 o'clock wind blows across the range from right to left, and a 9 o'clock wind comes from the opposite direction. It is the custom in some of the European countries to use an imaginary compass to locate the position of the shot and describe the direction of the wind, but their method is not as convenient nor as easily memorized as ours.—R. A. K.]

### S. & W. PISTOL ACCURACY

EDITOR GUN DEPARTMENT: Perhaps many of your readers, even those who are expert shots, may not fully appreciate the wonderful accuracy of the little Smith & Wesson .22 caliber target pistol and .22 long rifle cartridges. Enclosed are two consecutive groups of 10 shots each, made from



TEN SHOTS, U. M. C.—HELD FOR GROUPING, NOT FOR CENTER

machine rest at the gallery of the Manhattan Rifle and Revolver Association, with a 9-inch Smith & Wesson pistol and U. M. C. long rifle black powder cartridges, distance 20 yards. These twenty shots



TEN SHOTS, U. M. C.—HELD FOR GROUPING, NOT FOR CENTER

can be almost entirely covered by a five-cent piece and (with possibly one exception) the entire number would touch the half-inch 25 circle of the German ring target—credible work for a fine rifle at same distance. These groups are slightly better than the average results we have obtained under same conditions, but from thousands of shots fired it has been clearly shown that either an eight, nine or 10-inch pistol is easily capable of making perfect scores on the Standard target at twenty or fifty yards. In the machine rest used, the pistol is left as free to recoil and jump as if held in the hand in the natural position of target shooting. It is therefore just a little unfair for us to blame the gun when we hit the 4-ring; and although the machine rest shows great difference between the cartridges of the several makes, and even decided difference between batches of the same make and style of ammunition, yet the poorest is easily capable of keeping well within the seven or eight circle, not to mention the four or five ring. Yours truly,

W. J. COONS.

### N. R. A. MEMBERSHIP

EDITOR GUN DEPARTMENT: On page 500 of the May issue of the Outer's Book, there is an inquiry from a certain Mr. Schmeling relative to purchasing a new model Springfield military rifle. You reply, saying that it can be purchased by members of the National Rifle Association or of clubs affiliated with it. I have heard that members of government rifle clubs can purchase the new Springfield, but is it true that annual members of the N. R. A. can buy them? I am much interested in firearms and shooting, having been a member of the University Corps of Cadets for the last two years. I have practiced at the "U" with the gallery Springfield, caliber .22, and now have a model '95 Winchester N. R. A. rifle for 30-40 (Krag cartridges). The gun shoots fairly well, but I don't like the lever action, and have long desired a good bolt gun. I thought of joining the N. R. A., and will do it this summer. What other requirements does one need to buy the government rifle? I can furnish good references as far as knowledge of proper care of arms, and interest in the work. For the last year have procured Outer's Book from my newsdealer's, and have enjoyed the gun and ammunition department particularly. The government could get the people more interested in shooting if it would sell its rifles, of course under proper restrictions.



Hoping that I do not impose upon you for this request, and also a reply at your convenience, I am  
Yours respectfully,  
CHARLES RYDELL.

[Through the courtesy of Lieut. Albert S. Jones, Secretary of the National Rifle Association, I am able to give definite and reliable answers to your questions. Lieut. Jones says: "Life members in the National Rifle Association may purchase the Springfield rifle and ammunition from the Government. Members of affiliated organizations purchase their rifles from the club of which they are members. As the purchase originally must be made by the club itself from the government, such rifles after they have once passed into the hands of individual members become their individual property, and no further interest in them is taken by the government. As we had no such membership as annual members at the time congress passed the law authorizing these sales, this privilege could not be extended to such members." I am pleased to see so many of our most desirable young men taking an active interest in rifle and pistol practice, and the Gun Department of the Outer's Book will be found ever ready to supply information to all who may ask for it.—R. A. K.]

### THE SINGLE TRIGGER

EDITOR GUN DEPARTMENT: I have an Ithaca No. 4 shot gun of this year's model. Would like to ask if you know of any firm or manufacturer that would put a single trigger attachment on this gun. I like the hunter one trigger, but don't suppose they would put one on any gun except their own make. As I have only one arm, I think the one trigger would be quite a help. Thanking you in advance for any information you can give, I remain yours truly,  
E. H. LANE.

[I know of no manufacturer who will change your 1909 Ithaca double to a single trigger. The Ithaca people do not make a single trigger double gun. The L. C. Smith Company make single trigger double guns, but I cannot find anything to indicate that they would apply their system to another make of gun. I think the work would have to be done by some competent gunsmith. I would suggest that you write the John Meunier Gun Company, 272 West Water Street, Milwaukee, Wisconsin. They employ one of the best gun smiths in America. You could learn from them if there is a single trigger system that can be applied to the Ithaca, and the probable cost of doing the job. R. A. K.]

### BIG GAME RIFLE

EDITOR GUN DEPARTMENT: I note you say in the Outer's Book that any information your readers desire will be given, so I am writing to get your opinion on the best hunting rifle, a rifle for moose, deer, elk, caribou, grizzly, etc., as found in Wyoming and Montana. This fall I contemplate taking a hunting trip out west, and am going to purchase the gun that you refer me to, as I am sure you know more about this subject than myself. I have been using in the past, a 30-30 Savage, but have only hunted in Wisconsin. Now, what I want to know is this, is a 30-30 large enough for an allround big game

gun, or do you prefer the Winchester .30 U. S. Army Model, or .35 Winchester Repeater, or any other caliber? What is the license for hunting in Wyoming? And could you refer me to a good guide out there, or could you suggest a better place.  
Yours very truly,  
D. R. BLACKBURN.

[In selecting a cartridge for use on grizzly bear, moose, elk, caribou and deer, you need one possessing great penetration, range, accuracy and shooting power with the minimum of recoil. There are many good cartridges on the market possessing all the desirable qualities above named. My own choice would be a model 1895 Winchester rifle taking the new 30 rimless cartridge. This cartridge is one of the most accurate yet developed. It has a velocity of from 2200 to 2750 foot seconds according to the weight and shape of bullet used, and a relatively low trajectory. Its energy at 50 feet from the muzzle is 2286 foot pounds, the penetration with the soft nosed 220 grain bullet is 18½-inch pine boards, with a full mantle it will pierce 68 boards of the same thickness. When sighted at 100-200- and 300 yards the trajectory midway of each range is 1 inch, 4.52 inches and 11.40 inches respectively. The free recoil in foot pounds is 16.13. Should you desire a heavier cartridge with greater shocking power, the 35 W. C. F. with a 250 grain bullet, and the 405 with a 300 grain bullet, may be had in the same arm. Should you be partial to a bolt action I would suggest the 8MM cartridge in a Sauer-Mauser or Mannlicher rifle. Some of the greatest African hunters have found the above named 308 and 331 caliber cartridges and the rifles recommended, sufficiently powerful for the heaviest game. None of the cartridges of the 32 spl. -32-40-30-30-or 303 Savage class, although excellent in Wisconsin and Michigan, are adapted to the heavier game of the west. I carried a model 1895 Winchester, rimless 220 rain bullet, both full and half-mantle, on an extended trip through Arizona and old Mexico and it proved a most excellent and desirable weapon. My rifle was equipped with Lyman receiver, and ivory bead front sights and a shot gun butt. For information in regard to guides and license write M. P. Dunham, Ovanda, Montana, W. H. Jordan, Ishawood, Wyoming, and B. F. Bondurant, Bondurant, Wyoming, and N. S. Leek, Jackson's Hole, Wyoming. R. A. K.]

### ORGANIZING A CLUB

EDITOR GUN DEPARTMENT: As I am a subscriber to the Outer's Book, I take the liberty of asking you for some information in regard to organizing a .22 rifle club. Please send me some rules and regulations, also the different ranges and targets used for .22. Yours truly

H. A. NERISON.

[To organize a rifle club my advice is to get together all those who in your vicinity are interested in the movement, and send out a call for a meeting to organize. Have your local paper publish the call along with a good argument setting forth the benefits of such a club. When the meeting is ready to organize, elect your officers, a President, a Vice-President, a Secretary-Treasurer, and at least two other members of the association, who with the officers, shall constitute the Executive committee.



The initiation fee and dues should be merely nominal. as the expense for a .22 caliber range is not necessarily heavy. I would suggest that you organize under the requirements of the National Rifle Association of America, as there are many benefits to be derived from such affiliation. These are the requirements: "Twenty citizens between the ages of 16 and 45 in any locality may organize a club. The name of such a club should be if practicable, the same as the city or town in which it is organized. The bylaws as approved by the Secretary-of-War must be adopted. I will forward you, in a few days, a copy of the National Rifle Association rules for organizing rifle clubs, which will outline the many advantages of such affiliation. The targets used by most .22 caliber rifle clubs are the National Rifle Association Targets and the standard American reduced to dimensions proportionate to the distance at which they are used.—R. A. K.]

### ABOUT B. B. CAPS

EDITOR GUN DEPARTMENT: Will you please tell me whether or not the B. B. caps as manufactured by the Winchester and Union Metallic Companies have any bad effects on a gun? I would like to use the smokeless round ball caps in a .22 single shot Smith & Wesson and in a .22 rifle, but I am told they are very injurious to a gun, being loaded with fulminating powder. Wishing the Outer's every success and that the Gun and Ammunition department will continue to grow, I am, yours very truly,  
WARREN W. BRITT.

[I would not recommend the use of B. B. caps in any high grade arm like the Smith & Wesson pistol or the various makes of the .22 caliber rifle. It is pretty generally understood that there is a certain percentage of powdered glass in the formula of the priming of the B. B. caps which with each shot is deposited just ahead of the shell chamber. When used in quantities, this deposit soon cuts that section of the barrel to such an extent that the barrel is enlarged, the rifling ground out, and roughened so that rust soon finishes the work of destruction. Another troublesome feature of their use is the frequent leading of the barrel. The unlubricated pellets often stick in the barrel and several may become lodged at the same point before the obstruction is noticed. The conical ball caps are more desirable to use. They are loaded with smokeless, semi-smokeless and black powder by all reputable manufacturers. The bullets of the conical ball caps are lubricated and are therefore not so liable to lead, or stick in the barrel. If you decide to use the conical ball caps in your high class weapons, I would suggest that you wipe the barrels and mechanism freely.—R. A. K.]

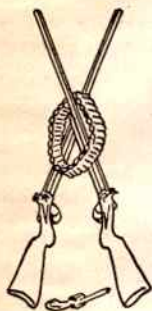
### RELOADING CARTRIDGES

EDITOR GUN DEPARTMENT: I have noticed in reading the different sporting magazines that there

seems to be a great many men who reload their ammunition, and have come to the conclusion that I would like to try it myself. Please give me information as to what primers to use, what kind of powder and how much for both full and miniature loads. How would the .303 British or Savage bullets be for my gun, a .30 '03 Rimless? I think these ought to insure a good, tight fit. Do the Ideal people make reloading tools for this gun and do they furnish instructions for reloading? Do the Ideal people or any of the large manufacturers of ammunition sell the new pointed bullets? Thanking you in advance, I remain, Yours truly,  
FRANK TRASK.

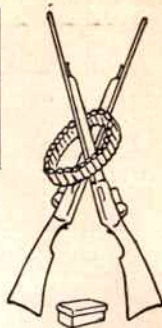
[If you have had no previous experience in the reloading of cartridges for your 30 caliber rimless, I would suggest that you send to the Ideal Manufacturing Company of New Haven, Conn., for a copy of their latest hand book. You will find it to be a compendium of valuable information on the subject of reloading cartridges for almost every kind of arm. As you do not give the make of your rifle, I presume it is a 95 Winchester. If so, the 303 British and the 303 Savage bullets will work well in it, as it is now bored to 308. It would be difficult to give a definite rule for your guidance without knowing the weight or kind of bullets which you intend to use. For a miniature load there is a great number from which to choose, varying in weight from eighty grains to two hundred and twenty, which is the standard. Powder charges vary from three grains of Bullseye up to the full charge of forty-nine of pyrocellulose, which is the government limit. A good miniature load for use at ranges varying from 25 to 100 yards is a bullet weighing 87 grains propelled by 5 grains of either of the following brands of smokeless powder: 5 grains "Unique," "Infallible," "Bullseye," or 6 to 7 grains of "Du Pont" smokeless No. 1. At ranges from 100 to 150 yards, a bullet weighing from 125 to 150 grains ahead of 5 to 7 grains of "Sharpshooter" 8 to 10 grains "New Schultz" 10 grains of "Marksman," or 15 grains of DuPont No. 1" smokeless, gives good results. By increasing the weight of the bullet, and using the copper base cup made by the Ideal Company, the range and velocity may be increased if desired, up to six hundred yards. For the latter distance a charge of from 20 to 23 grains of Lightning smokeless is used. All of the bullets not patched should be composed of an alloy of 80 per cent lead, 10 per cent tin, and 10 per cent antimony. A good lubricant should be used with all naked bullets. In varying from the formula of a certain load, if it is desired to increase its strength, watch the primer carefully, and if it is flattened out, flush with the edge of the primer pocket, the limit of safety has been reached. In experimenting increase the powder load not more than a grain at a time. Weigh your powder carefully, and when using a brand of powder that does not fill the shell be sure that you do not inadvertently double the load. With the 30 rimless an infinite variety of loads can be made for any kind of work with a rifle. R. A. K.]





# GUNS AND AMMUNITION

EDITED BY ROBERT A. KANE



This department is intended to be a place for the exchange and discussion of views on any subject pertaining to arms and ammunition, from which no one with an idea to advance shall be barred. The only conditions are that the opinion must not be manifestly absurd, that it be expressed in courteous language and that no personalities be indulged in. Each opinion is printed for what it is worth and its publication does not commit the editor to the view expressed. The widest range will be permitted and our readers are invited to make free use of these pages, but it is important to remember that *under no circumstances will personalities ever be permitted.*

## SELECTING THAT RIFLE

### PART I

By EDWARD C. CROSSMAN

TO the average man, even though he be a lover of outdoor life and more or less of a hunter, there is a certain mystery about rifles and cartridges. And the smooth blue tubes of a shotgun are not a whit less mysterious.

One make of rifle shoots much better than another, even though the same cartridges be used. Another make of rifle shoots absolutely flat in defiance of all the laws of gravity, and despite the fact that a cartridge *may* be used, which pitches the bullets to the mark in about the same curve described by a brickbat going over the alley fence. A certain make of rifle is "hard-hitting." Not the cartridge, but that make of rifle, mind you, although the rifle is made for every standard cartridge from the .22 caliber up, and with some of the cartridges is about as hard hitting as the tap of your best girl's fan.

The manufacturers of rifles do their best to encourage this pleasant mystery, seeming to prefer to depend upon this unknown, inexplicable quality of their make of gun for their sales, to selling the arm upon its real merits. Advertisements warning the prospective purchaser to supply himself with "The Hard-hitting Barbarian," if he desires to have a ghost of a show for game, are common in our outdoor magazines.

This buncombe and hocus-pocus used at times in selling rifles, is only equalled by the astounding line of talk put up by the makers of photographic lenses and field glasses. The rifle makers—by inference if not directly—claim to have the secret of setting aside all the laws of gravity, and by a certain combination of a nitro explosive, lead, copper, brass and steel, to exercise this gravity

demon from their weapons. The lens makers, by a secret combination of glasses, obtain a special dispensation from Mother Nature whereby they are not governed by the laws of optics.

A bullet which travels "flat" for 300 yards is only equalled by a lens cutting sharp everything from three feet to infinity and working at F.4. Yet both of them are obtainable—if you have implicit faith in what you read.

The only excuse for this paper is to try to sweep away some of the mystery at present shrouding rifles and ammunition in a pleasant, dim, uncanny haze. The only explanation for the wonderful performances of some rifles—according to their owners or makers—is that the spirits assisted the bullet. It makes the subject a whole lot more attractive to put it on its own basis as a wonderful problem in physics, the solution of which is worked out by well known laws.

The first and most important thing is to remember that the selection of a rifle—to use a Hibernianism—should not be the selection of a *rifle*, but the selection of the *cartridge* which you believe will best do the work for which you want it. Then from the rifles made for this cartridge, select the one appealing to you the most. A certain cartridge will perform the same in any standard rifle, be it Savage, Winchester, Marlin, Stevens, Remington or one of the bolt action, foreign tribe. At 1,000 yards, an expert rifleman might be able to detect some difference in the extreme accuracy of the different arms—due principally to variations in the fit of the bullet, but for ordinary hunting purposes or for short and mid-range work, up to 600 yards,



all standard rifles will shoot alike, using the same cartridge.

When a man goes into a hardware store to buy an edged tool, he usually has a faint idea, at least, of the use for which he wants the tool. Unless he has but recently been gazing upon the wine when it is red, he is not likely to select a safety razor for operations upon the family wood pile, nor would he consider a scythe the best instrument for manicuring purposes. It is true that by careful use of a pen knife he might split kindling, and by expert use of a sharp axe he might shave himself, but it is better certainly, to purchase a tool particularly adapted to the use he has in mind.

Yet the gun store men say that it is not an uncommon happening for an intelligent appearing man to stray in and demand a rifle which will prove equally satisfactory for use on rabbits and grizzly bears, without change of ammunition or sights. They carry such rifles in stock, it is true, but it might be difficult to discover the rabbit after the fuss was over. It is by the far the best idea to select a cartridge for the specific use you have in mind. If you want an all round rifle, however, it is well to remember that a powerful, high velocity cartridge, amply strong for the big game, can be reloaded and used satisfactorily on the smaller game—rabbits, squirrels, woodchucks, tin cans and paper targets, but that a low power cartridge, made especially for small game, cannot well be loaded heavily enough for the big game you may encounter.

To select a cartridge intelligently, and to be able to smile in a superior manner at the gun dealer when he tells you solemnly that a certain rifle will shoot "absolutely flat" for 300 yards, it is well to go into the subject of the flight of a bullet fired from a gun. From the fact that the bullet cannot ordinarily be watched in its flight through the air, there is a certain amount of mystery attached to it, whereas there is nothing mysterious about it. The flight of a bullet is very little more complex than dropping a watermelon from the third floor on your enemy's head. Gravity is the main force to be considered in both cases.

When a bullet is fired from the barrel of a gun, it is just as susceptible to the wiles of the gravity siren below it as though it were simply dropped from the muzzle of the gun. It is a very common idea that if a bullet is speeded up fast enough, it can escape the force of gravity—sort of an artful dodger, as it were, speeding too fast for gravity to discover it.

If a bullet is dropped from your hand through the air, it falls some 16 feet the first second, 48 feet the next second, and so on. And a bullet fired from the muzzle of a rifle and sent out on a perfectly horizontal line, although it may be traveling at the rate of 3,000 feet per second away from the gun, it falls toward the ground just as though it were dropped from your hand—16 feet the first second, 48 feet the next one. A bullet therefore, traveling at the uniform speed of 2,000 feet per second away from a rifle, held perfectly horizontal, four feet from the ground, would strike the ground one-quarter second later—or 500 feet away. If the rifle were fired at a deer 600 feet away and the bullet traveled the entire distance at this high speed, it would strike the ground 100 feet short of the animal. Therefore to counteract this gravity force, it is necessary to raise the muzzle of the rifle above the horizontal

line, and use some of the powder force in pushing the bullet away from the gravity giant clutching at it. The pressure of the air has a great deal to do with the flight of a bullet but we are considering it in this case, as though it were fired "*in vacuo*."

The bullet of a 30-30 cartridge, a typical hunting cartridge, if fired from a rifle properly aimed to strike a target 300 yards away from the muzzle is over 15 inches high half-way along its course—that is the muzzle of the rifle has to be pointed at a spot 15 inches higher than the level line from the muzzle of the rifle to the target. And conversely, if the rifle were sighted for 300 yards and it were fired at an object 150 yards distant, like a deer for instance, it would very likely skim nicely over the top of the animal's back, even though the rifle were aimed right at the quarry by the luckless hunter.

The flight of a bullet is therefore on a curved line, and the less time the bullet is exposed to the pull of gravity, the "flatter" the curve. For instance, the bullet travels at the rate of 2,000 feet per second, and is fired at a mark just 2,000 feet away. Air resistance being forgotten for the nonce, the bullet reaches the mark just one second later and is exposed to the downward pull of gravity for just this space of time. The muzzle is therefore aimed at a point above the mark and the bullet gaining the distance above the horizontal line necessary to counter-act the force pulling at it, "slides" down the further side of its parabola to the mark. Another bullet, sent out at a speed of but 1,000 feet per second, takes two seconds to reach the mark, is exposed to gravity twice as long as the first bullet, and it must therefore be sent in a higher curve to prevent gravity from bringing it to the ground before the mark is reached. At 300 yards the 30-30 bullet rises some 15 inches in its flight—that is the rifle is aimed this far above it. But the old Government bullet, fired from the 45-70-405 rifle, if aimed at a mark 300 yards away, rises 30 inches above the normal line or twice the height of the 30-30. The 30-30 has therefore the flatter curve in its flight or "trajectory." Its trajectory is not flat, however, any more than a dog's hind leg is straight, but it is flatter than the slow moving 45-70 bullet, simply because it travels faster and does not give gravity the time to drag upon it, that the slow flight of the 45-70 affords.

The "flat" trajectory of a bullet therefore depends first upon its speed, then upon its shape,—whether it gives the minimum of air resistance and, lastly upon its weight,—whether it holds its energy in spite of the air resistance, or whether it being light, falls off in speed like a feather thrown from your hand, as compared with a pebble.

The chief advantage in flat trajectory is that it lessens the chances for missing your mark through error in estimating the distance, or through not having time to change the sights of the rifle for quick shots. A rifle sighted for 100 yards and having a flat trajectory, in shooting partridge, would not miss a deer if the game were 200 yards distant and the rifle was fired point blank at it. The bullet would strike lower than your point of aim, and it would be preferable to raise your sights if time permitted, but still, for a quick shot, you would probably score a hit if your aim was not too low down on the body of the game. But with one of the old style, low-velocity, curved-trajectory rifles, where the bullet travels in a high curve, the greatest care is



necessary in setting the sights for long shots, else the bullet would go curving just over, or just under the game. It is just the difference between firing a mortar at a ship, where the shell travels in a great high curve through the air and where the projectile will score a miss if not exactly aimed, and firing an ordinary coast defense gun with its low-curved trajectory. There is no mystery about it, the bullet that travels the faster, arrives at the mark in the shorter time, and therefore offers less chance for the pull of gravity to operate. The shape of the bullet would have nothing to do with its flight—in vacuo—but the resistance of the air has a great deal to do with the flight of the bullet. For this reason, the bullet having the sharper point will hold its velocity—its speed—better than a bullet with square nose or even a blunt rounded one. And again a bullet offering the smaller section to the air, will hold its velocity far better than the one having its weight in a different form, where the air can push against it and hold it back. Air resistance is great factor in the flight of a bullet. No man who has ever ridden a bicycle against a good stiff breeze has any doubt as to its efficacy in slowing up the speed of a moving object. A bullet traveling at the rate of 1800 feet per second, is bucking an air resistance equivalent to a wind blowing 1200 miles per hour. A wind blowing at one-twelfth this speed would uproot trees and overturn strong buildings, so it is easy to see that this air resistance would have a great effect on the flight of a projectile. This air resistance is negligible at the short ranges, up to 300 yards, but above this range, the falling off in the speed of the bullet is noticeable, and the man who likes to try long shots at game or target cannot afford to overlook this feature. The resistance of the air is one of the great arguments against the big bore cartridges, except for hunting at short ranges. The resistance of the air, to projectiles traveling at velocities from 1500 to 2000 feet per second, is not increased in *direct ratio* with the increase in the size of the bullet but it increases with the *squares of the different diameters*. For instance the air pressure on two bullets of the same shape, one .30 caliber and the other .50 caliber, is not as 3 is to 5, but is as 3 is to 8, or nearly three times as much as the smaller bullet has to buck. When we come to consider that we have an equivalent of a 1200-miles-per-hour zephyr, to drive our bullet against, the difference in the bullets is worth considering. Therefore if we want a bullet of a certain weight—that is delivering a certain amount of energy that we know is necessary to kill game, it is apparently better to put it in the form of a long, thin, bullet at high speed, rather than a short, stubby one that has to buck from two to three times the air resistance. At short ranges this is not worth considering, but the true rifleman will want to try shots at long range at times and there is no use in wasting his powder's energy driving a stubby projectile through the dense body of air between it and its target.

Uncle Sam considers this problem of air pressures so great that he called in his brand new model of 1903 rifles, tens of thousands of them there were, and rechambered them for a new bullet having an extremely sharp point, with which it had been found that the velocity could be held up to the long ranges. Diameters being the same, the heavier bullet will usually hold its velocity longer than the

lighter ones, both of them being started at the same speed. Not so this new bullet. It is but 150 grains in weight against 220 grains for the former bullet. Yet on account of the sharper point, it holds its velocity much better than the older, heavier bullet, although they are both the same diameter.

The greatest objection to the long, thin, small-bore, high-velocity type of cartridge, is that in the opinion of some people, this bullet does not strike as heavy a blow as the larger bullet; that it tends to penetrate cleanly without causing much shock or loss of blood. This was true with the bullets encased entirely in the copper-nickel jacket, used with the small-bore high-velocity bullets to insure their sticking to the rifling, but with a bullet properly made, having its point of soft lead, it strikes a blow powerful enough for anyone and penetrates to the vitals of the animal, something that cannot always be said of the large-bore, lead bullets, advocated for game shooting by some hunters.

Again, the large-bore bullet, even though it be metal patched as the large bore cartridges are now made, tends to flatten out too much or break up, from having too great a striking surface and not enough bullet behind to hold it together. Lead bullets of large bore are particularly liable to fail in their penetration, to "dinner-plate" instead of mushroom, to flatten out entirely on a large bone and fail to reach the vitals of the animal. The ideal game killing bullet for large and tough game would be a bullet from three to five times its diameter, in length, traveling at high speed and with soft point. A bullet of this kind would mushroom enough to give the shock required and still have enough undeformed bullet left to complete the penetration to the vitals of the animal. Moose have been found time and again containing flattened lead bullets, evidently fired from some large bore, low velocity rifle and which failed to kill or even permanently disable the animal. You have a certain amount of energy to deliver. You can deliver this in the form of a bullet, easily flattened out and deformed, excellent for soft fleshed game such as deer or antelope but not good for tough game like the moose or grizzly. It is easy to find a bullet that will deliver a powerful blow but this is not all that is required. You can deliver quite a little energy and a heavy blow with a base-ball bat in the hands of a husky man but this will not prove very effective. You can deliver it in the form of a brickbat and get the same striking energy that is behind your bullet, but all the harm that will result will be a set of sore ribs for the game struck. You can deliver your energy in the form of a small-bore bullet that will mushroom on impact to a certain degree and yet retain penetration enough to reach the vitals. This is better than a flattened out bullet on the outside of some big bone, and this is the tendency of stubby, big-bore bullets on striking tough, long-haired, thick-skinned animals.

And again, the bullet traveling at extreme high speed has an explosive effect of its own, and converts the parts near it, when it strikes game, into projectiles themselves, just as the blow of a mallet on a stationary croquet ball, converts it into a projectile itself. Uncle Sam mentions this explosive effect in his "Small Arms Firing Regulations" for the army, and it is well known that shots from high-power, small-bore rifles in the stomach were nearly always fatal in the late wars, while bullet



wounds, from the same rifles, in the head, were often not serious. This, of course, with full metal patched bullets, with soft point the head shots would have been fatal almost without exception. Some of the big-bore bullets are almost as large in diameter as they are long, and they flatten out on the least provocation. And you cannot imagine a flattened out button of lead penetrating very far, either. When you shoot game you want to do business with the insides—the works—of the animal, not merely with his hide or the flesh immediately adjoining.

The all-round rifle has yet to appear. It is perfectly practicable to load the most powerful cartridges on the market, and get good results on the small game, by using light powder charges and a small bullet. And if you—like most Americans—want but the one rifle and cannot afford an entire battery like our English cousins, it is well to get a cartridge large enough for the largest game you expect to hunt in the next five years or for the longest range at which you expect to practice. Lighter loads for other purposes are easy to work out.

But—if you are positive that you will never cross the path of the festive grizzly, that you have no ambitions to see a moose head of your own getting in your den, then don't get a grizzly rifle. If all that you want to do is to blaze away at a mark, to shoot squirrels and tin cans and blue jays and chicken hawks and your neighbors' cats, don't get a .405 Winchester. It is fine for big game but is not a pleasant rifle to shoot, and there is no use killing your small game so excessively that you cannot find it afterwards. If this is the height of your ambition—and you are planning a whole lot of fun for yourself, even if your quarry is not large—get a .22 caliber rim-fire rifle of standard make—a repeater, of course, adapted to the short, the long and the long-rifle cartridges. You will have an arm that can be used on the 200 yard range with the long rifle cartridges, with results that will make the shooter of the heavy gun sit up and take notice—providing of course there are no excessive zephyrs rambling about the vicinity of the range. And for back yard practice, or your range that you fixed up in your basement, the .22 short, smokeless powder, will give you fine results and won't bellow to the passing policeman every time you pull the trigger either.

If you are a one-gun man, don't make the mistake of buying one of the small fry caliber rifles, that stand between the .22 and the 32-40. The calibers of the class of the 25-20, 32-20, and all the other multitudinous calibers of this class are very nice for certain kinds of game shooting, or target practice, but they are not worth while to the one-gun man. If his sole ambition is small game and short range target practice, the .22 rifle will take care of his requirements. The .22 long rifle cartridge with mushroom bullet will do wonders in killing game, as the writer can testify, and even a coyote or small wolf will fall before its deadly fire under 100 yards range. And the small rifle affords lots of practice at a small cost, the .22 caliber cartridges costing about 25 cents per 100, and the long rifle costing 35 cents for the same number. The cartridges of the class of the 25-20 and 32-20 cost around \$1.50 per 100—six times as much as the .22 caliber, and

the owner has a rifle that is neither fish, flesh nor good red herring. It is like the lazy man who was too light for heavy work, and too heavy for light work. This just about describes these "betwixt-and-between" calibers, although of course, for the man with half a dozen rifles, they are very fine for certain classes of game. The 25-20, 32-20 and other cartridges of this class are too light for deer, although deer have, of course, been killed with them. The cartridges cost too much for the all-round blazing which the small rifle lover wishes to do, and the one-gun man with one of them will find that he didn't get much of a rifle after all.

If you are entirely certain that deer or small black bear will be the largest representatives of the furred family you intend to hunt in the next five years—if you want a cartridge that can be reloaded easily, that is made in more different loads by the factories, and that has more different forms of ideal cast bullets adapted to it than any other cartridge made; that is the most accurate cartridge in the world with but one exception, perhaps; then buy a 32-40 rifle with nickel-steel barrel and be happy. It is hardly heavy enough for grizzly or similar tough animals—although the writer would prefer to be the man behind the rifle than the grizzly if a test came—but for all ordinary American game it is a killer. Why a man will buy a .30-30 or any other rifle of this class, such as the .303 Savage or the .32 Special, when the 32-40 rifle is obtainable the writer cannot see.

The 32-40 has been the standard for years for fine target shooting and today, it, with its twin, the 38-55, are the cartridges used by the lovers of fine off-hand shooting at 200 yards. And the devotees of this sport want a cartridge that will put one shot almost on top of another at this range. The factories supply for rifles of this caliber, the 32-40 black powder cartridge; the short range cartridge; the miniature cartridge; the low pressure smokeless cartridge with either full metal patched or soft nosed bullet; the 32-40 lead bullet cartridge with smokeless powder; and the 32-40 high power cartridge, with either full metal patched or soft point bullets. This makes a total of six different cartridges, all of them *entirely different* and adapted to different sorts of shooting. The cartridges cost about twice as much as the 25-20, but the owner has a rifle that can be changed from a fine short-range target, or small game shooting, arm, to one of the modern high-power, hard-hitting class, similar to the .30-30 and .303. The shell is straight taper, there is no bottle neck to stick in your rifle, and which requires resizing when reloading, to finally break short off after a few shots. The bullet weighs 165 grains, five grains less than one make of .30-30 cartridge and five grains more than another make. With the high power cartridge—and mind the name, a certain company underloads these cartridges for the 32-40 rifle, calls them "High Velocity" and lists them in its catalogue as much inferior in power to their real strength when properly loaded. These are not what you want. With the high power cartridges, the rifle gives an initial velocity of over 2,000 feet per second, a striking force of close to 1600 foot-lbs., and a penetration of 33 inches in pine with full metal cased bullet.

[TO BE CONCLUDED]

Continued on page 45



# THE LEVER vs. THE BOLT ACTION

## A CRITICISM OF A COMPARISON

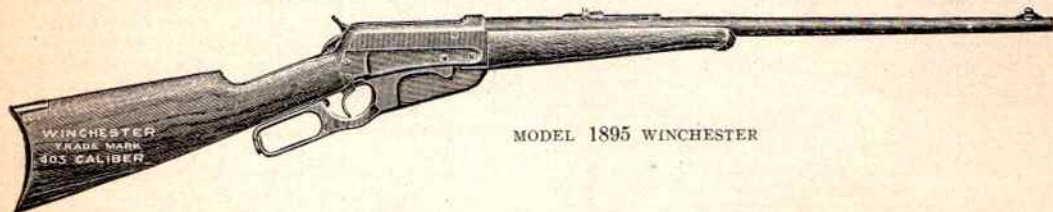
### PART II

By CHARLES NEWTON

THE next point is concerning the consequences of a burst primer. I once got a lot of cartridges for my 30-30 Marlin which evidently had copper primers and nearly every one burst at discharge but no gas ever found its way back along the firing pin hole as far as the hammer and I am confident that neither Winchester or Marlin will let gas from a burst primer back the length of the bolt. However, tests are easy and I wish the Editor would load a high power Winchester or Marlin with a copper primer, fire it and tell us if he got any gas at the rear end of the bolt. A No. 7 U. M. C. primer will burst readily but will ignite the powder. As to the springing of the Model 1886 Winchester bolt, this bolt is about  $\frac{3}{4}$ " x  $\frac{1}{8}$ " square and runs in a groove in the receiver, the walls of which are  $\frac{1}{4}$ -inch thick and the bolt has a flange on each side its full length running in a corresponding groove in the wall of the receiver. Did Mr. Crossman ever see, hear, feel, smell or taste one of these bolts spring? If not, how does he learn it? The next point of alleged superiority of the bolt

is one which comes into use any time a person travels with the rifle, therefore is of much greater importance than a feature which is seldom used. As to ease of taking the rifle entirely apart, the bolt action is certainly superior to the lever action, and we will examine the *relative importance* of this point of superiority.

Rifles are made to use, not to take apart and put together again. If facility of taking apart and putting together is of greater importance than speed or accuracy of fire, then the bolt action is superior. On the other hand, if dismounting and assembling is an operation performed but once in several years, or even at shorter intervals, unless it becomes a matter of practically everyday experience, it is better to have a rifle which gives the greatest efficiency in the field than one which will come apart easily, unless the liability to breakage is so great as to make ease of repair in the field of paramount importance, and we will see if it does. The settlement of the West and conquest of the prairies and mountains required, received and developed a class



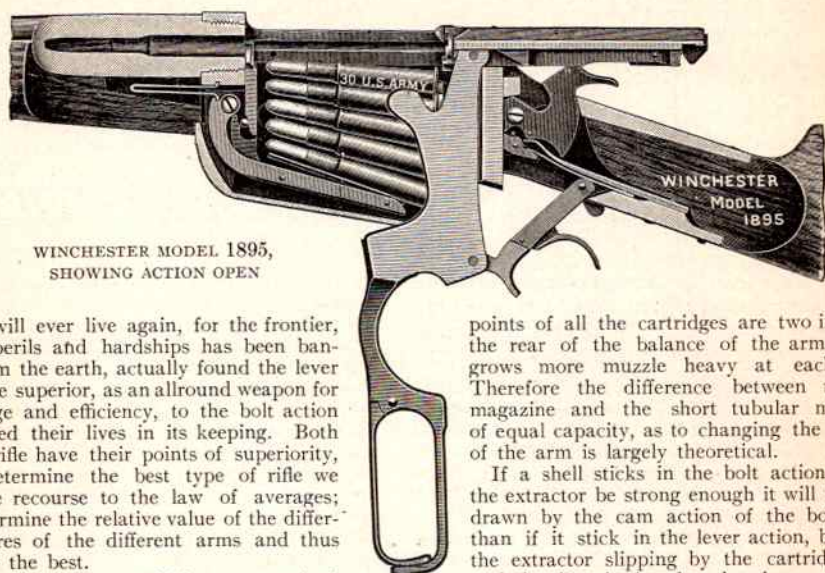
action over the lever action is in its "simplicity and ease of dismounting." This head is susceptible of discussion from two standpoints, taking down for packing or carrying in a Victoria case, and taking the rifle and lock mechanism completely apart. From the standpoint of convenience in taking down for transportation, our repeaters, if purchased in the take-down model, readily come apart leaving the stock, lock and all operating mechanism in one part and the barrel and magazine attached in another and will then pack in a space the length of the barrel with no loose pieces. With the bolt action one must use a screwdriver and take the weapon apart, leaving loose screws and parts to get lost or misplaced, and when it is taken apart it still requires space for packing sufficient in length to accommodate the stock and forestock, which are all in one piece, also the length of the receiver is added to that of the barrel. Therefore the rifle cannot be carried in a Victoria case nor can it be packed in any trunk of ordinary size. This point

of men who were true frontiersmen, who were away from civilization for months at a time and whose food was procured and scalps protected by their rifles and revolvers. These were practical men, of much experience and their very lives depended upon the accuracy, durability and efficiency of their rifles, consequently they would not, as a class, be swayed by fad or theory regarding their weapons, but would and did choose those which long experience demonstrated would give the best general average of service under the conditions in which they were used. The tests of service to which these weapons were put were fully as strenuous as any to which the modern sportsman subjects his rifle and as a result the American coat of arms might well be a Colt's revolver and a Winchester forty-four. There has never been an arm which has received to nearly unanimous an approval as the Winchester type of lever action repeater received at the hands of these frontiersmen, and, since there were bolt action rifles on the market during nearly



all the time the reputation of the Winchester type of rifle was being thus made and tested, one of which was made by the Winchester company itself. The only explanation is that this class of men, who were more qualified to pass judgment upon this question than any other class of men who ever

from it. So does the bolt action, but in a less degree. With a rifle having a tubular magazine of just sufficient length to accommodate the same number or cartridges as used in the box magazine, that is five, the rifle will balance at about the base of the rear cartridge. With the box magazine the



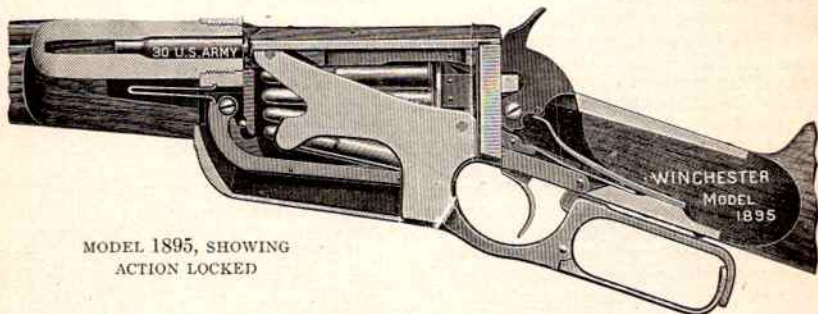
WINCHESTER MODEL 1895,  
SHOWING ACTION OPEN

lived or will ever live again, for the frontier, with its perils and hardships has been banished from the earth, actually found the lever action rifle superior, as an allround weapon for hard usage and efficiency, to the bolt action and trusted their lives in its keeping. Both styles of rifle have their points of superiority, and to determine the best type of rifle we must have recourse to the law of averages; must determine the relative value of the different features of the different arms and thus determine the best.

We have no court to which we can submit the question, but we find, nevertheless, that they have been passed upon, first by the great army of frontiersmen who tamed the West, and later by the whole American people, and the determination of the first was affirmed by the second with practical unanimity, and was in favor of the lever action repeater. It may jam, it may break, the flat springs may be all wrong, it may be complicated, it may get out of order, it may be hard to repair, and may balance improperly, but neither the frontiersmen or the American public have been able to notice it

points of all the cartridges are two inches to the rear of the balance of the arm, and it grows more muzzle heavy at each shot. Therefore the difference between the box magazine and the short tubular magazine of equal capacity, as to changing the balance of the arm is largely theoretical.

If a shell sticks in the bolt action, and if the extractor be strong enough it will be withdrawn by the cam action of the bolt easier than if it stick in the lever action, but as to the extractor slipping by the cartridge head and leaving it in the chamber, extractors can be made as strong in one type as in the other, and can be made to stick as closely to the shell. As to the likelihood of this kind of an accident happening, it enters into the great law of averages which, when summed up, has pronounced so conclusively in favor of the lever action. As to cleaning the rifle from the breech, the take-down lever action is just as handy as the bolt action and does not require as long a rod. As to the safety on the bolt action, the half cock notch has sufficed for the great army of American sportsmen and the



MODEL 1895, SHOWING  
ACTION LOCKED

during the forty odd years in which the word "Winchester" has signified everything which is reliable and efficient to the great army of American frontiersmen and sportsmen, and during which bolt action rifles of equal excellence except as to design have ornamented the shelves and storerooms of the manufacturers. The next subject of criticism is the tubular magazine. It does change the balance of the arm somewhat as the cartridges are used

different locking devices which have been put upon our rifles from time to time, although efficient in their action have been abandoned as a useless complication. Therefore the question as to which is the better style of action is largely one of taste combined with adaptability to the purposes for which it is to be used. Each type has its points of superiority and each its disadvantages. The lever action combines speed of fire to the capacity of the



magazine, trimness of outline, ease of manipulation and symmetrical disposition of weight to meet shock of recoil. With this comes a more complicated construction accompanied by such a perfection of material and workmanship that the complicated construction practically ceases to be an objection. The bolt action is simple in construction and admits of rapid recharging of the magazine, and rapid and easy dismounting and re-assembling, therefore its disadvantages consisting of slower opera-

tion, more awkward manipulation, throwing the rifle out of balance under shock of recoil by the bolt handle projecting from the side, inability to take-down and more clumsy appearance due to the box magazine are outweighed by its good qualities *when considered from the standpoint of a military arm* but disqualify it for use as a popular sporting rifle and readily account for the fact that in America it has never been seriously considered for that purpose.

## ENCOURAGING RIFLE PRACTICE

THE attitude of the government and the National Guard Authorities throughout the country toward the civilian rifle shooters has greatly changed in the last year or so. No longer is the government rifle an object of curiosity to the American citizen; no longer does he stand on the outside of the fence and watch the national guardsmen at work at the butts, fearing to trespass upon the range. It is now possible for any citizen to purchase the government rifle and ammunition and the ranges of both the federal and state authorities are thrown open to them for practice. That rifle shooting as a pastime is rapidly increasing in favor is shown by the fact that within the last eight weeks rifle clubs have been organized in the following localities: New Haven, Conn.; Apalachicola, Fla.; Altoona, Ill.; Chicago, Ill.; St. Paul, Minn.; Manchester, N. H.; Atlantic City, N. J.; Brooklyn, N. Y.; Earlville, N. Y.; Bisbee, Ariz.; Birmingham, Ala.; St. Augustine, Fla. There have also been clubs organized by the students of the Michigan Agricultural College and the Agricultural College of Utah. Among the public and preparatory schools of the country over forty clubs have been organized and affiliated with the National Rifle Association of America. Many of the boys have purchased the government rifle and are shooting side by side with their fathers and big brothers, using the same methods and qualifying as junior marksmen. Another subscriber to the endowment fund which the Association has been trying to raise has been secured. The plan is to secure twenty subscribers at \$5,000 each for an endowment fund of \$100,000, the income from which is to be used in promoting rifle shooting among colleges, schools and civilians. The scheme was suggested by Robert Bacon, ex-secretary of state, who was the first subscriber. The second man to show his patriotism is General McCrosky Butt, of New York. It should not be difficult to secure eighteen more men who are big and broad and patriotic enough to help out this very laudible scheme. Great interest is being taken by the military schools of the country in the action of the National Rifle Association in throwing open its matches to teams of cadets. If the transportation and subsistence of such teams could be taken care of by the government in the same manner in which the state teams are looked after it is quite probable that Camp Perry would see more cadet teams at the shoot than National Guard teams.

The school authorities and the boys are willing but the expense incidental to sending these teams to the national shoot is too great to be undertaken by the schools themselves. The \$1,500 silver cup presented by the United States Marine Corps to the National Rifle Association for an individual match, which will be held at Camp Perry has been delivered and is a beauty. Every rifleman on the grounds will want to have a try at it. Col. R. K. Evans, executive officer of the matches, is working out the details of his skirmish match which will be the first attempt to make the new battle conditions lately adopted by the Small Arms Board of the Army applied to a competition and is arousing a great deal of interest among the shooters. Six hundred and sixty-two members of the Coast Artillery Corps of Connecticut competed for the National Rifle Association medal on the state range last month. The winner was Sergt. James F. Chadwick of the tenth company located at New London. State Rifle Associations have lately been organized in Florida, Arizona and Mississippi. There are now thirty-two states and territories with state associations. The one hundred mark will soon be reached by regimental organizations affiliated with the Association. The latest acquisitions are the Seventh Regiment of New York, Seventy-Fourth Regiment of Buffalo and the First Infantry of Arizona. It is believed that there has been no action since the revival of rifle shooting began that will have such a far reaching effect upon the future of rifle shooting in this country as the action taken by the National Rifle Association of America in deciding to return to the competitors in its annual matches all entrance fees on the percentage basis, less the actual cost of running the range. As the Army will have charge of the matches, furnishing the officers, markers and scorers, the percentage of entrance fees available for distribution will be large. Another popular move was the lengthening of the prize lists so that in the larger matches twice as many competitors will be in for prize money as heretofore. The National Rifle Association in deciding to make this move believes it has met the wishes of all the rifle-men of the country and it is now up to them to make a success of the innovation. Programs and information of the big shooting tournament to be held at Camp Perry, Ohio, in August can be secured from Lieut. Albert S. Jones, Secretary National Rifle Association of America, Hibbs Building, Washington, D. C.



# WANTED—A .22 AUTOMATIC PISTOL

## A FEW SUGGESTIONS

SINCE the invention of fixed ammunition, no single cartridge has done more to promote marksmanship and foster the love of fire arms among Americans than the dainty diminutive little .22 caliber rifle cartridge. Many a rifleman of national reputation may easily trace his string of victories with match and military rifles, back to an humble beginning with a cheap Flobert Rifle and a box of .22 shorts. At first they were looked upon with contempt by the stalwart giants who shot the powerful long range .45 and .50 caliber Sharps and Remingtons, but like everything of right principle, the baby caliber gradually worked its way into general recognition and popular favor, until today, the .22 caliber rifle is universally recognized as a most important factor in the education of riflemen. Not only is the .22 placed in the hands of the school boy and cadet, but it is an important item in the equipment of every company of national guardsmen or regular troops; While every expert shot numbers among his favorite arms a .22 caliber target rifle having some specially favored action, and a barrel by Pope, Zischang, or some other famous maker, the excellence of whose handiwork is a permanent standard for the less carefully finished product of armorers who manufacture rifles in vast numbers by machinery. Thus in the domain of the rifle, the .22 caliber has been received with something like due appreciation. The same can scarcely be said of the .22 caliber in the not less important field of the pistol. 'Tis true Stevens, Remington, Wurflein, and Smith & Wesson have produced first class target pistols, but they were in nearly every instance intended for target work only, and were single shot arms. Not a single type of repeating pistol to take a .22 caliber cartridge of any kind has ever been offered to American shooting men, that could in any way be called a success. Some were too small and light, others too large and heavy, and all were handicapped with that inherent defect of the revolver which permits the escape of gas between the barrel and cylinder, causing a loss of energy, and an accumulation of fouling at that point. This is one of the natural limitations of the revolver, and as an obstacle to the further development of that type of arm, it appears to be insurmountable. Still another is the cylinder. Not only is it bulky and cumbersome, bulging to both sides as it does, but the number of shots must of necessity be limited by the circumference of the cylinder and the size of the cartridge, both of which must be kept within the dimensions demanded by long established laws of symmetry and proportion. The use of smokeless powders would, in a measure, eliminate the disagreeable feature of fouling, so long a nightmare to revolver shooters, but here our progress would cease. By taking the automatic type of pistol as a principle to build upon and improve, we seem to have practically unlimited latitude in almost every direction. Certainly the plan of its mechanism is

admirably adapted to the requirements of the .22 caliber cartridge. The closely locked breech mechanism prevents the loss of energy, so disastrous to the miniature cartridge. The long magazine, located in the handle, insures an ample number of rounds so that reloading is no longer a drudgery. There are no unnecessary projecting corners or bulging sides, to catch on things and wear bright. The sighting plane is the whole, over-all, length of the arm. It has a single action lock work and trigger. *No other kind has ever furnished an excuse for its existence on any arm.* The plane of function is straight forward and back, thus reducing the liability to clog or block while in action. The mechanism is simple, contains but few parts, and all the parts necessary to remove for cleaning are easily dismounted and assembled without the aid of tools. Notwithstanding all of the good points, here noted, and they are natural to the type, the automatic pistol in its present stage of development is far from being the perfect weapon which is the dream of the American target expert, the soldier, or the sportsman. The mechanical principle is ideal, the speed of maintained fire all that can ever be desired for the individual, and the system of recharging the magazine is speedy and in every way satisfactory. In mentioning the above advantages, I have the Colt's automatic in mind, but the points brought out are common to all of the best makes of the automatic type.

In naming specifications for a new .22 caliber auto pistol, to avoid complications and the necessity for adding another cartridge to the already too numerous list, we suggest that the pistol be made to take the Winchester .22 caliber automatic rifle cartridge which is powerful, clean, smokeless, and greaseless. A rimfire is not expensive to shoot, and it has been thoroughly proved in the arm for which it was originally designed. Its dimensions are such that the magazine and the grip which receives it may be reduced to exquisite proportions, and modeled to any desired shape. Mr. Lowdermilk wisely suggests the Colt single action grip as the pattern that would give the most general satisfaction among the shooters who have given the subject sufficient study to have formed a definite opinion in regard to it. This form seems to have been accepted without question by all the manufacturers of high grade weapons in America. It seems to meet the requirements of the various groups of pistol shooters who differ widely in their ideas of manipulation and shooting, more nearly than any other form of grip. It is distinctly American, lends itself readily to the varying sizes and structure of the hand and has returned to universal favor after other patterns of grip have been tried and failed. In the new weapon we want no hyphenated title. Neither .22-32 nor 22-45, nor any other suggestion of a compromise. We want a .22 caliber automatic pistol from cornerstone to cupola, a weapon that when finished and placed in the hands of



shooters, will represent the best thought of the progressive and representative shooting men of America. In our former efforts to get a revolver more in accordance with modern ideas, we became hopelessly divided on the most trivial points, often losing sight of the main question entirely. This can scarcely happen again, as most of the causes for contention formerly encountered have been permanently settled by changing conditions. There can be no difference of opinion as to caliber, for the new gun is intended to occupy an entirely new field. The merits of double and single actions can not be brought up for discussion, for the reason that the automatic types are all single action and can be fired faster than the most enthusiastic admirer of the double action ever dared to claim for his favorites and that too, without deranging the aim by pulling against the combined strength of main and sear spring with the trigger. There will be no fear of the arm varying in its elevation or energy on account of escaping gases, such a condition is impossible, each cartridge is chambered in the barrel and the breech locked until the bullet has left the muzzle, thus utilizing the full value of the powder charge. In an arm as light in caliber as a .22, great care should be exercised to avoid the common mistake of making the arm too light. Each arm requires a certain amount of weight to handle to good advantage. Probably no small arms of which we have any knowledge were so perfectly balanced as certain accepted models of the dueling pistol; in these it was noticeable that most of the weight was forward of the grip. The tendency of modern armorers more especially those who build the automatic types, is to place the weight mostly to the rear of the trigger. This method, together with the short slender barrel, does not give us the muzzle weight so familiar in our revolvers and so essential to steady holding. We have erred in both directions, and now that we are designing a new weapon for up-to-date shooting methods, we should see to it that former errors of construction are avoided in so far as they may be. The automatic types have been in general use for over ten years, or long enough to have made their way in the shooting world, but it can not be claimed that they have done so. We look in vain for worlds records with Colt or Luger. The Bergman and Mauser are not conspicuously mentioned among the shooting stars of St. Louis and Manhattan, and our cautious military group still cling lovingly to the faulty revolver. There is a reason for this, and to my mind, the reason is not far to seek. Theoretically, the auto pistol is the more perfect arm for every purpose for which a one hand gun may be used. They are accurate as the revolver, and with the same load, will shoot 25 per cent stronger. They are easily dismounted for cleaning, requiring no tools, and are less susceptible to injury, and the speed of fire when once started, is incomparably faster than with the revolver. What then is the cause for the preference shown the older weapon? To my mind it is its superior fit and balance. *The handle of a pistol should be more than a mere casing for machinery. It should be designed with an idea of fitting the average man's hand when held in a natural shooting position.* The angle of the hand with relation to the barrel should be such that aim can be taken without bending the arm or wrist out of a natural easy line. There should be weight

enough forward of the trigger to balance the arm and steady it while aiming. No matter what the mechanical perfections of an arm, if it can not be held to point of aim or directed quickly and naturally at the object to be hit, it can never become a favorite with expert marksmen. I am of the opinion that the mechanism of most auto pistols is unnecessarily heavy, and in some instances, the frame of the weapon contains too much dead metal. With some makes the barrel is short, out of all proportion to the total length of the arm. When this occurs the proportions are not pleasing to the eye, and it is extremely difficult to so distribute the weight that a well balanced weapon can be produced. Colt and Savage have shown us that a highly complicated or an intricate system of machinery is unnecessary. That all the machinery necessary to function properly may be contained within a limit of less bulk and even greater beauty than any of the revolver types to which we have become so strongly attached. Taking a system like the Colt or Savage as a principle for the proposed .22 caliber multishot pistol, let us see how they might be modified to meet our requirements. It is essential that a first class weapon should be safe, beyond question. Therefore, the breech should be securely locked until the bullet has left the muzzle. This feature is already assured as most auto pistols are so constructed that no gases escape. A uniform pressure is maintained against the bullet while passing through the barrel, a condition essential to accuracy and proper combustion. *The grip should be placed at such an angle with regard to the bore that the cartridges would feed easily and surely from the magazine into the chamber, no matter what position the arm may chance to be held in.* This angle should permit the hand when in the act of firing, to be placed as near as possible in the line or recoil of the axis of the piece. An inherent fault of the revolver is the height of this line above the grip, which is no doubt responsible for much of the disagreeable muzzle disturbance of the latter arm. Shall we have an outside hammer? The sentiment of most progressive gun students would probably be against the outside hammer, but what have we to take its place? If we enclose the hammer within the frame, it means a diminutive little safety that can not be shifted, with a cold or gloved hand, or an additional automatic safety sear, placed on the rear of the grip that must be grasped in an arbitrary manner to function properly. Weapons so equipped have never been the chosen arms of the knowing ones, whose lives depended on their guns. I believe an outside hammer like the one on the single action Colt revolver, of proper shape and proportion, would be preferable to any other device. Time has proved that no other weapon could be gotten into action as quickly and as safely as the single action Colt revolver. The greatest objection to any of the automatic types as an emergency gun, is the exasperating slowness of firing the initial shot. It not only requires extra motions, but under certain conditions, the employment of both hands. Given an outside hammer with a properly shaped spur, and a good deep safety notch, the gun may be carried with the chamber loaded. It can be cocked safely and surely with the thumb as it is drawn from the holster, and the first shot delivered with incredible speed. It would make but little difference whether the .22 caliber were made with the hammer covered or



exposed, but as part of our object in advocating the new gun is the ultimate improvement of all American arms, it is worth while to study the subject from every point of view. A feature of the auto pistols as at present constructed, is the overhang to the rear. This projection does not contribute to the beauty of any arm, and is not necessary as a mechanical feature. Should a well shaped hammer be applied to the new pistol, it could be utilized as a guide to the slide, and the overhang dispensed with. In comparing the different existing models and makes, we may glean many good points from each. We may also learn to avoid much that is unsightly and undesirable. Assuming that the mechanism is contained within the handle, as with the Colt and Savage, a longer barrel will be required to give the proper balance for accurate shooting and ease and speed in handling. If any of our first class pistol makers will give the development of the automatic pistol, the attention which it merits, perfecting details of mechanism, refining and beautifying

exterior outlines to conform to long established ideas of beauty in gun architecture, I venture the prophecy that the results will not only be a surprise to themselves, but the demand will astonish even those manufacturers who have been accustomed to filling military contracts. Almost every sportsman's journal contains inquiries for a .22 caliber pistol suitable for snap shooting. Rapid fire methods are becoming more popular, already some of our progressive marksmen are anticipating the manufactures by applying .22 caliber barrels, and cylinders shortened and bushed to take the .22 long rifle smokeless cartridge, to Colt and Smith & Wesson models of appropriate weight. A .38 Smith & Wesson military, and a Colt Police Positive, so treated, in tests at fifty yards range, showed surprising accuracy. Scores of 86, 88, 89 and 90 being made. If such accuracy can be secured with a converted arm, what may not be done with weapon built specially, with every perfection of balance and mechanical detail.

## A BOOST FOR THE AUTO

EDITOR GUN DEPARTMENT: I want to add another boost to Mr. Lowdermilk's idea of the desirability of an automatic .22 caliber pistol. It seems to me that either the Colt or Winchester people have a first rate chance to put a fine selling proposition on the market, and fill a gap for just such a gun. And as Mr. Lowdermilk says, do not make it a vest pocket abomination—make it with a five or six-inch barrel, not too light, and with a comfortable grip—one that you can get hold of with the whole hand, instead of two fingers. Make the trigger pull as light and clean as is consistent with safety, and with sights that are removable if desired. It would seem that the grip safety is amply sufficient without the positive lock. The Winchester .22 auto cartridge should perfectly fill the bill, both for power and cost, for the type of gun in question. Like those mentioned, I have had the .22 auto "bug" for some time, more so since using a Luger. I like the Luger very much indeed, and am reloading both reduced and full automatic charges, using a bullet for the full loads, of my own design, with fine results. I am getting the trigger pull gradually lightened and am beginning to get results that look like fair success, but for some localities and for a tramp though deep brush, it is too much gun in the first case and too expensive in the second. When one can pick up from 50 to 75 per cent, or even more of their Luger shells, as in target practice, it makes very cheap and strong shooting, but finding those same shells in the brush, is like finding hen's teeth. Here is where the .22 auto pistol, smooth working and well sighted, would shine. How many times you will see mentioned; that so many hunters carry the Stevens or Smith & Wesson pistols for small game. Why not the .22 automatic then? As I have not seen previous numbers of the Outer's Book, and judge that previous articles have been written on the Revolver and Its Use, I should like to ask the editor what type of pistol or revolver seems to have the call as a bona fide target gun, for twenty and fifty yards, where the military, double action and "knock down"

features do not flourish? The gun, that in the hands of a studious and conscientious shooter and one who can hold and pull, largely eliminates itself from criticism of its faults, throwing the burden of fault on the man who is back of it and watching his money disappear in a whiff of smoke? I am reloading several of the high power cartridges, full charge, and like to see what others are doing—also make a cherry and cut a mould now and then. But everybody get to gether, pull up you "galluses" and whoop for a .22 automatic pistol, made with civilized dimensions. Yours truly,

H. B. JOHNSON.

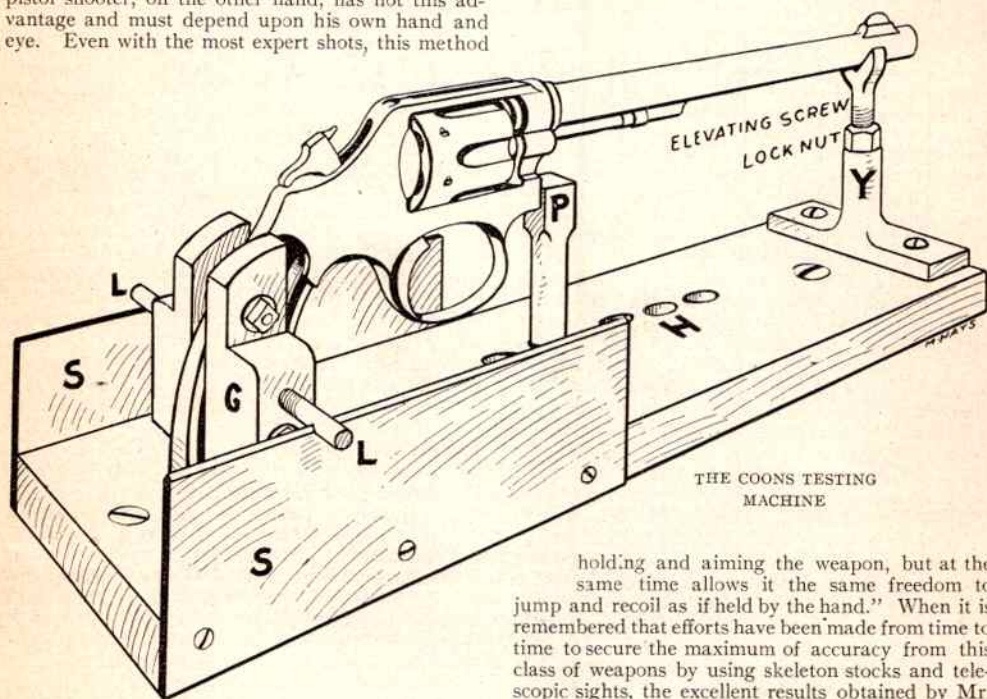
[Mr. H. B. Johnson's letter is characteristic of the many which we are receiving daily since Mr. Lowdermilk first broached the subject of the .22 caliber automatic pistol. No suggestion offered by a practical sportsman, for many years, has caught the fancy of the public so quickly, or met with so cordial and enthusiastic an endorsement. Answering Mr. Johnson's query as to what type of a pistol or revolver has the call as a bona fide target gun for twenty or thirty yards, where the military double action and knock down feature do not flourish, etc., I would say that the .22 single shot pistol is the choice of all those who know anything of its real advantages, among which are cheapness of ammunition, marvelous accuracy, portability, cleanliness and other desirable features. With the .22 pistol one is exempt from the drudgery of reloading cartridges, of cleaning during and after prolonged practice, the perplexities of break-downs, and the expense of repairs. The .22 pistol has but one drawback, and that is the monotony of loading one shot at a time, thus limiting the speed of fire to a degree that is somewhat trying to those who have been accustomed to the exhilarating speed of medium caliber repeating pistol, revolver or rifle fire. At present we have no weapon in the domain of the one hand gun that corresponds to the automatic and repeating .22 caliber rifles, which have proven so popular.—R. A. K.]



## HOW TO TEST A PISTOL

BY submitting the interesting drawing of his machine rest for testing the accuracy of one hand guns of every type, Mr. W. J. Coons of New York has taken the initiative in a movement which, if followed to a logical conclusion, will do much to educate the public to a better understanding of the possibilities of short barreled guns. Mr. Coons truthfully says: "A rifleman, when using a new arm or experimenting with ammunition, can place the gun in a rest and learn with mechanical certainty in a short time, and with the expenditure of a few shots, the merit of his gun and load. The pistol shooter, on the other hand, has not this advantage and must depend upon his own hand and eye. Even with the most expert shots, this method

ing, but must hold the muzzle free. A machine rest for the pistol would readily label the inaccurate ammunition, and it seems strange that some one has not put such an appliance on the market." In view of the ever increasing interest of the various groups of shooting men in the evolution and performance of the pistol, it would seem that the efforts of Mr. Coons are being directed along the right lines. The results obtained have been more uniform and satisfactory than by any other method yet devised. The principle of the Coons machine rest "Not only eliminates the human element of



THE COONS TESTING  
MACHINE

must be uncertain, and if my own slight experience is any criterion, the average shooter is naturally apt to think a certain load is allright because he happens, when trying it, to be in unusually good form or to be favored with good luck. The same man also is apt to condemn a load if he happens to make a series of unsatisfactory scores. . . . It is plain that testing a pistol with the hand and eye is more difficult, and firing a greater number of times in order to arrive at definite and correct results, than testing a rifle from the shoulder. Hence there is greater need for a pistol than for a rifle machine rest. The pistol shooter has not even the advantage of resting the muzzle of his weapon when test-

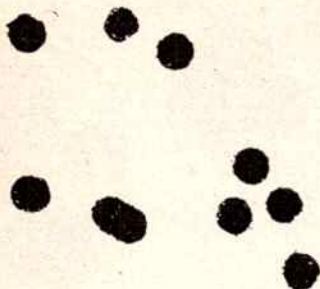
holding and aiming the weapon, but at the same time allows it the same freedom to jump and recoil as if held by the hand." When it is remembered that efforts have been made from time to time to secure the maximum of accuracy from this class of weapons by using skeleton stocks and telescopic sights, the excellent results obtained by Mr. Coons are the more remarkable. A fresh interest has been awakened on the subject of pistols and their performance. The government is testing new types of the revolver and automatic pistols of various makes with a view to their adoption, exhaustive tests have just been concluded to determine the most accurate make of ammunition for use in service revolvers, pending the action of the ordnance board in regard to the automatic pistols, now undergoing the test of actual service. From the meager report received and the hurried methods of conducting so important a test, experienced, and scientific shooting men might with entire propriety question the results so obtained. No doubt the test was wholly impartial to all concerned, but



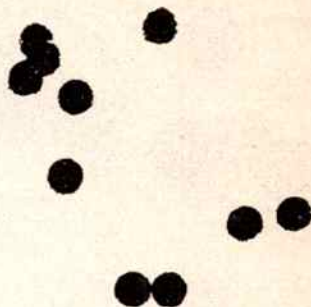
## Gun and Ammunition Department

were the methods used, such as would bring out the full merits of the various loads? The machine rests as used by the government to determine the comparative merits of the five different makes of revolver ammunition were constructed as follows: Five cement bases, four feet below and four feet

but the weapons remained unchanged throughout the test. It would be a most interesting and instructive proceeding to substitute machine rests of the pattern invented by Mr. Coons for the one used by the government in the recent test, all other conditions being identical, and compare the results



10 shots, 50 yards, Smith & Wesson military revolver, 2 7-10 grains Bullseye powder, Peters 110-grain bullet. Reduced one-third.



10 shots, 50 yards, .38 Smith & Wesson military revolver, 3 1/4 grains Bullseye powder, 158-grain U. M. C. bullet. Reduced one-third.

above earth were built. On top of these heavy two-inch planking was bolted and to these the revolver rests were secured by heavy screws. The service revolver, 38 caliber Colts, were then clamped into the machine rest, sighting shots were allowed which in all cases were taken. One shot at a time being placed in the cylinder for that purpose. As

obtained. Mr. Coons and his clubmates of the Manhattan Rifle and Revolver Association have done considerable experimental work with both the rigid type of rest where the muzzle is held down firmly and the one where the muzzle is left free to recoil and jump in a natural manner. Mr. Coons says: "The rigid machine has been tried



10 shots, 65 feet, Smith & Wesson pistol, U. M. C. .22 long-rifle cartridges.



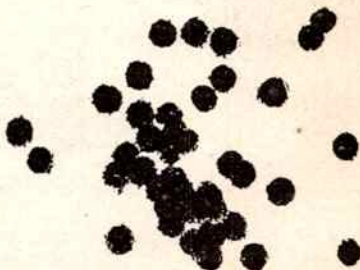
10 shots, 65 feet, Smith & Wesson pistol, Peters .22 long-rifle cartridges.

a usual thing, two sighting shots were fired. Once but one was fired and once four were taken which was the highest number. The time limit for record firing was set at ten seconds for the five shots which were placed in the weapons at one time. After the firing of each series of five shots for record, the contestants were each assigned to another rest

but little, and although it makes very close groups, the interesting question remains to be answered whether the rigid style of machine will make a proper distinction between what would be regular and irregular ammunition if fired under match conditions, and whether or not its close groups signify more than that the revolver itself is accurate."



40 shots, 50 yards, Smith & Wesson pistol, Peters Stevens-Pope-Armory .22 cartridges. Reduced one-third.

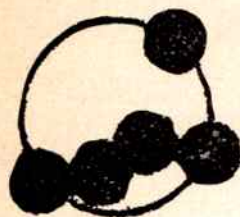


40 shots, 50 yards, Smith & Wesson pistol, U. M. C. .22 long-rifle cartridges. Reduced one-third.

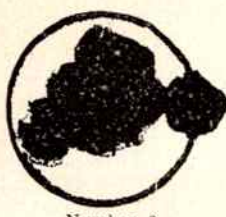


We reproduce herewith some remarkably close groups made by Mr. Coons with his free recoil machine rest. These groups were shot with a .38 Smith & Wesson target revolver with a 6½-inch barrel. The .22 caliber groups were made with a Smith & Wesson single shot pistol with an 8-inch

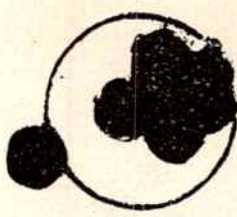
compose his muscles and pulse into a condition of perfect rest, or nurse his nerves into that semi-hypnotic condition which compels the round headed little demon of a front sight to suspend his hair spring fandango for the fraction of time necessary to press the trigger. The use of a well



Number 1.



Number 2.



Number 7.



Number 8.

barrel. A very ingenious pneumatic device for tripping the trigger was invented by Mr. M. Hays, to whose skill and courtesy we are indebted for the drawing, but in making the accompanying groups the trigger was pulled by hand. The question of rest shooting must always be one of great interest to gun men and those who imagine that it is easy

constructed rest like the one illustrated by Mr. Coons will save much discomfort, enable every one to test his own arms and loads and eliminate most of the uncertainties which must remain for a



Number 3.



Number 4.



Number 9.



Number 10.

to acquire the skill necessary to get the possibilities for accuracy from a high grade arm, can have another guess. Watch the average man sighting his hunting rifle and you will notice that few if any are able to maintain the body in perfect repose in any position a sufficient length of time to release the sear without deranging the aim. Some men,



Number 5.



Number 6.



Number 11.



Number 12.

on account of peculiarities of physique or temperament, may not hope to master the art of rest shooting, although they may be excellent marksmen in other positions. The man who is full blooded and carrying considerable flesh will find it difficult to

long time in one's mind where arms are sighted without the assistance of some such steadying appliance. We should avail ourselves of every



legitimate means to quickly acquire a thorough knowledge of both our weapons and their loads, so that we may be the better able to conduct our practice in such a manner as will enable us to get the best results in the shortest time with least effort and expense. In practice with any type of arm I believe it is well to establish for one's self at least,

a process of elimination. Thus when a fault is discovered, work with direct reference to it until it is wholly eliminated or as nearly so as may be, working on each adverse condition in turn as they present themselves until all are remedied or improved. When all doubt as to the cause of trouble is removed it is usually a short road to the cure.

NOTE—The groups shown were from Machine Rest at 20 yards with Smith & Wesson .38 revolver. No. 1, 5 shots, No. 2, 10 shots, No. 3, 5 shots, Ideal 134-grain No. 360270 bullet, 2.4 grains Laflin & Rand Bullseye powder. No. 4, 10 shots, No. 5, 8 shots, Ideal 134-grain No. 360270 bullet, 2.7 grains Laflin & Rand Bullseye powder. No. 6, 10 shots, No. 7, 10 shots, Ideal 154-grain No. 360270 bullet, 2.7 grains Laflin & Rand Bullseye powder. No. 8, 10 shots, No. 9, 5 shots, No. 10, 5 shots, Ideal 154-grain No. 360270 bullet, 3 grains Laflin & Rand Bullseye powder. No. 11, 10 shots, Silliman-Manhattan load, 2.4 grains Laflin & Rand Bullseye powder, Ideal No. 36072, 110-grain bullet. No. 12, 10 shots, U. M. C. factory full charge Smith & Wesson Special smokeless cartridges.

## FOR MILITARY RIFLEMEN

It is our esteemed privilege to review the latest work on the rifle by Lieut. Townsend Whelen, entitled "Suggestions to Riflemen, Revised Edition 1909." Although primarily intended for military riflemen, the information contained therein is equally valuable to every student or user of modern firearms. The volume is of convenient pocket size, contains two hundred and forty-five pages of most excellent reading, every word of which is information of the most practical nature. Numerous illustrations show the firing positions best adapted to steady holding and a successful employment of the gun sling as an aid to extreme accuracy. The work is interspersed with simple tables for sight adjustment, wind allowances, elevations, etc., and how to handle mirage, light, and atmosphere. The opening chapter is devoted to the "Selection of an Accurate Rifle." No aspiring young marksman who reads this need be handicapped with a poor weapon. Methods of testing, and calibrating are described in such detail that anyone with ordinary gun sense may himself conduct the test. The care of the rifle is next in importance, and receives due attention. The latest formulas for removing fouling and metallic deposits are given, and information as to where the various ingredients may be purchased. Nothing that can be of use to the novice or the veteran rifleman on the range or in the gun room, has been omitted. Every paragraph of the work is filled with knowledge which takes a lifetime to acquire, which some men can never acquire, and which few can impart to their fellows. Short, mid and long range firing are fully described. Slow, rapid, and skirmish firing are explained in detail, while even snap shooting at moving objects receives attention. Lieut. Whelen's book is the last word on modern high power rifles, and should be in the pocket of every rifleman. The work is published by the Franklin Hudson Publishing Company, Kansas City, Mo.

which resulted in a victory for the latter by the small margin of seven points. These clubs have in this manner created considerable interest among the officers of the police forces in their cities, and are taking full advantage of same by holding bi-monthly matches for championship of the force. In both cities, business houses and citizens have put up prizes to be shot for by the clubs. The San Francisco officers say they are out of practice with no place suitable for target practice, and have decided not to enter the match. Any police revolver club desiring to participate in San Francisco's place, can have full information by writing Mr. Addleman at above address.

### A GOOD TARGET

The target shown herewith was recently made at Cincinnati by H. B. Wilson, who has contributed a number of valuable articles to the department. It was made with a Colt Police Positive .38 caliber



### FOR A POLICE MATCH

J. A. Addleman, with the Honeyman Hardware Company of Portland, Oregon, has been trying for several months, to arrange a revolver match with the Portland, San Francisco, St. Louis and Cincinnati police revolver clubs. Portland and Cincinnati shot a match in September of last year

revolver at 20 yards. Mr. Wilson is deeply interested in revolver work in police departments, and if the average officer were his equal as a shot, few offenders would care to act as targets.

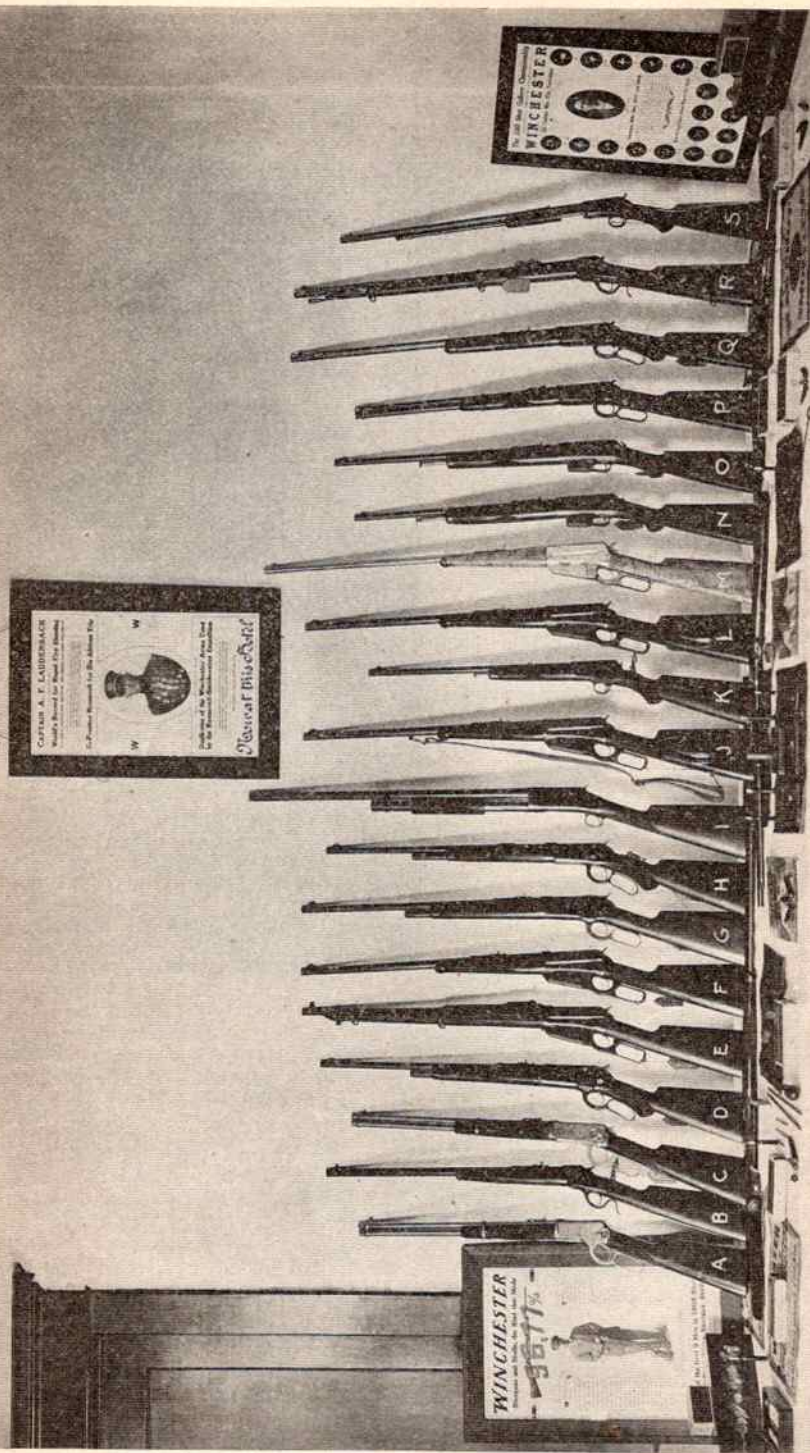


## AN INTERESTING EXHIBIT

TAKING advantage of the public interest in the style of guns used by ex-President Roosevelt on his African trip, the Winchester Arms Company, with their usual progressiveness, arranged an exhibition of their goods, including duplicates of the Roosevelt guns, and sent it out under the supervision of Capt. Laudensack, the crack military shot, to be shown in all the large cities. Naturally the exhibit has attracted wide attention and it has served not only as a splendid piece of advertising for the Winchester company, but as a means of educating the shooting public in the matter of the latest gun and improvements. While the exhibit was showing in Milwaukee, the Outer's Book succeeded in taking the only picture of it that has been obtained, which is shown on another page, and, which we believe will interest thousands of readers in places where the exhibit was not taken. As a matter of course, the duplicate arms of the Roosevelt expedition were objects of profound interest to every one. Many complimentary remarks were heard among the visitors as to our great ex-president's rare good judgment in selecting such practical, powerful, and convenient arms for his dangerous expedition. The personal armament of Mr. Roosevelt consists of three model 1895 Winchester rifles chambered to take the 405 caliber cartridge, which makes the most powerful repeating rifle made in any country. One rifle of the same model to take the 30 rimless or U. S. Springfield cartridge, undoubtedly the most accurate long range cartridge ever developed, and the one with which our gallant American riflemen defeated all comers at the Olympian games in 1908. Two exquisite little model 1903, .22 caliber automatic rifles, each duplicates of the one with which Capt. Laudensack scored 91 shots in one minute at Camp Perry in 1908, establishing a world's record for rapid fire. The 405 and the 30 rimless Winchester rifles made for Mr. Roosevelt have the standard twenty-four inch barrel, fancy American walnut stock and fore-end, tastefully checked, a shotgun butt with Silver's recoil pad, and each has a shapely cheek piece neatly carved on the left side of the comb, which has the effect of throwing the line of sight directly over the center of the barrel, a most essential feature when aiming hurriedly. The little .22 caliber automatics are made with fancy American walnut stock and fore-end, pistol grip, checked in appropriate design. They are unchallenged beauties and every inch effective weapons. The famous armament of the deservedly celebrated hunter, is appropriately completed by the addition of a model 1897 Winchester 12 gauge repeating shotgun. Like its mates, it is made with special walnut stock checked, with straight grip, and silver recoil pad. No gun ever made has met with such unprecedented success with so little advertising. To it belongs the unique distinction of having so successfully passed the exhaustive test of the U. S. ordnance board that not a single recommendation for change was made,

or considered necessary. It is while mingling with the crowd at the Winchester exhibition, that one begins to realize that there are many men of many minds, among the gun loving fraternity. Discussions there were in plenty as to the relative merits or performance of each particular type or caliber of arm. There could however, be no difference of opinion as to the symmetry of outline, excellence of workmanship, quality of material, and beauty of finish. The display consisted of twenty-three guns representing some of the more recent ideas in gun architecture and decoration. Outside of the Roosevelt group with their business-like appearance, were many exquisitely decorated arms of the various models, which might well be classified as works of art. Conspicuous among these was a Model 1895 chambered for the 30-40 cartridge. It had a twenty-eight-inch barrel, full nickel plated, gold finger lever and trimmings, and birdseye maple stock and fore-end finished in natural color. No combination could be better calculated to display the naturally graceful lines of this famous model. The proportions of the model 1894 are admirably adapted for the purposes of decorations. Among the many rifles displayed was a model 1894 which was truly an aristocrat among that goodly company. A 30-30 of standard dimensions, finished in the natural colors of walnut and gun metal, the fore-end and shapely pistol grip stock elaborately hand carved with delicately shaded grape leaves and bold sweeping scroll work. The barrel, the finger lever, the frame, and the butt plate were inlaid with airy gossamer lines of platinum and gold. The side plates were inlaid deeply with gold figures of fighting bucks and a challenging bull moose which showed in striking contrast against the rich satin finish of the dark gun metal. Another weapon much admired especially by the numerous lady visitors was a model 1892 carbine made for the Mexican trade. It was well calculated to captivate the fancy of the glitter loving southerner. The short barrel and finger lever were heavily silver plated, while the receiver, the bands, the butt plate and the sling ring were of burnished gold, and the hammer and screw heads were of blue steel, and every metal surface was lavishly engraved with appropriate scenes. A noteworthy feature of the exhibit was the care displayed in selecting the woodwork for the various arms. The military arms were supplied with close hard straight grained walnut, while the fancy arms were in most cases made up with the celebrated feather grain walnut, than which nothing more beautiful has ever been used in gun construction. Among the various models displayed, the knowing ones could easily note the many concessions made to individual ideas and the requirements of various organizations. Side by side with the sportsman's favorites could be seen the grim but graceful lines and military finish of the repeating rifles made to conform to the requirements of the National Rifle Association, and the .22 caliber





THE WINCHESTER-ROOSEVELT EXHIBITION — Taken especially for the Outer's Book.

(A) Model 1892 carbine; (B) single shot, new two-part take-down system; (C) Model 1894 carbine; (D) Model 1896, .33 caliber, half magazine; (E) Model 1895, N. R. A. musket, .30 caliber rimless; (F) Model 1896, .35 caliber; (G) Model 1896, .45-70 light-weight; (H) Model 1894, 30-30 light-weight; (I) Model 1887, 12 gauge pump shot gun (Roosevelt); (J) Model 1895, .408 caliber (Roosevelt); (K) Model 1903, .22 caliber automatic (Roosevelt); (L) Model 1895, .30 caliber rimless (Roosevelt); (M) Model 1895, .30 Model 1895, 28-inch barrel; (N) Model 1907, .351 caliber self-loader, 20-inch barrel; (O) Model 1905, .32 caliber self loader, 22-inch barrel; (P) Model 1894, carbine leatherweight; (Q) Model 1894, 32-40, special finish; (R) Single-shot .22 caliber army musket; (S) Model 1890, .22 caliber repeater.



musket for armory use. As the result of a demand for a light weight big bore sporting rifle, a 45-70 in the famous model 1886, weighing but 6½ pounds is shown, which can be had with every variation of finish to please the most fastidious. Capt. Laudensack was ably assisted in his efforts to entertain the public by Mr. Sylvester of Chicago, Mr. Keyes of the New York branch, and Mr. Siefkin, the hustling missionary of Milwaukee, all able representatives of the enterprising company, whose Big Red W is always a welcome sight to gun men.

Capt. Laudensack, himself, was an interesting part of the exhibit, since his fame as a rifle shot is widespread. The Captain, who lives in New Haven, Conn., was for a long period a member of the Connecticut National Guard and for ten successive years held second high average for his regimental rifle team. His first appearance at a tournament of note was at Sea Girt, in 1905, in attendance on the National Matches and matches of the New Jersey State Rifle Association, where in winning the Kuser Rapid Fire Match with a score of 117 he distinguished himself and made a new world's record. In doing this he used a Winchester Model 1895 rifle, which is the same kind of rifle that ex-President Roosevelt has taken to Africa to shoot big game with. As this is the most powerful repeating rifle made and has great rapidity of fire, as is shown by the world's record made with it as above, it will readily be recognized how deadly a weapon Mr. Roosevelt has. At the National Matches at Sea Girt in 1906, Capt. Laudensack again won the Kuser Rapid Fire Match. In 1907, the National Matches were held at Camp Perry, where Capt. Laudensack made another new world's rapid fire record, scoring fifty-one shots in one minute at 300 yards with a Winchester Model 1905 .32 caliber self-loading rifle. Again in 1908 at Camp Perry, he put up still another world's rapid fire record, targeting 91 shots in one minute at 200 yards with a Winchester .22 Automatic rifle and Winchester cartridges. Capt. Laudensack seems to excel particularly at rapid-fire shooting, but is also able to do notable work at other forms of shooting, as his performance at the tournaments of the Zettler Rifle Club in New York City shows. On the difficult bullseye target he was second last year, making a target of one degree; and on the ring target he tied for first place with three "possibles" of 75. This year he also made "possibles." On account of



CAPT. LAUDENSACK

Capt. Laudensack's expert knowledge of firearms, he was selected to inspect and sight all the arms carried by ex-President Roosevelt to Africa.

## RELOADING FOR THE SAVAGE

EDITOR GUN DEP'T.:—I am much interested in the gun question of today. After having read and studied all the makes and calibers I finally decided on the Savage 32-40. This caliber I think about right. I have never had a 32-40 before and therefore I would like to know your own special combination. There are loads recommended in the Ideal Book for every bullet, and all of that, but everyone who has reloaded his own ammunition knows of some special combination that is a winner. I would like your advice in this matter.

Yours truly,

"SANDY."

[Before advising anyone on the subject of reloading cartridges, I consider it the part of wisdom to call attention to the dangers attending the operation, when using brands of smokeless powder which do not fill the shell. In most instances smokeless powder should be weighed carefully, and extreme care taken to avoid doubling the charge. For the 32-40 high power 23 grains by weight of Lightning smokeless with either full metal cased bullet or Ideal cast bullet No. 319295 with copper gas check on base. For mid-range and short range, 6 to 8 grains by weight of Unique smokeless with a bullet cast 14 parts lead to one part tin.—R. A. K.]



# THE GRAND AMERICAN HANDICAP

By D. H. EATON

THE tenth Grand American Handicap was held at Chicago, June 22 to 25, on the grounds of the Chicago Gun Club. The results showed that progress has been made in the use of the shotgun, as in many other ways, during the past year. The weather during the week averaged fair. It was seasonably but, with no strong winds to increase the difficulty of hitting the clay targets, and, except on one day, no rain to stop the shooting. The tournament was under the direction of Mr. Elmer E. Shaner, as usual, and his corps of trained assistants in the responsible positions, ensured the smooth running of the events. Mr. Fred Whitney, of Des Moines, Iowa, again looked out through the cashier's window, at the crowd of shooters, anxious to put up their money for a chance at the big prizes. He knew them all, and answered their good-natured "kidding" in the same vein. In this position Mr. Whitney's proverbial coolness and good nature make him without a peer. Mr. Bernard Elsesser, of York, Pa., was in charge of the important work of compiling scores, and figuring out the moneys. For several years he has acted as assistant, and this year proved that he was well skilled in all the intricacies of the work, by his accuracy and speed in preparing the pay orders for the winners. Mr. Charles North was in charge of the traps, and with the exception of the first day, kept them working smoothly and to their limit. The traps used on the first day had been tested before being installed, but the pressure, when over 300 shooters were to be served, was too much, and they developed a weakness which caused a delay that it was impossible to make up. On Tuesday night the old Leggetts were replaced, and no further trouble was experienced, but it was necessary to carry the events forward so that the championship were not shot until Saturday instead of being finished on Friday. This is something that has never happened before since the G. A. H. was inaugurated in 1900, and it is safe to prophesy that it will never happen again. Mr. Fred Teeple, Secretary of the Chicago Gun Club, had charge of the field force, and certainly had his hands full. The arrangements for the comfort of visiting shooters and spectators were ample, and in the commissary department a decided improvement over those of two years ago.

The handicapping committee was composed of Messrs. G. V. Dering, Columbus, Wis., Chairman; Fred H. Teeple, Chicago; Woolfolk Henderson, Lexington, Ky.; Geo. K. Mackie, Scammon, Kans., and Elmer E. Shaner, Pittsburg. All the members are thoroughly conversant with the conditions in the trapshooting world today and well qualified to pass upon the merits of the individual shooters. The task of handicapping a large number of shooters from widely separated localities is a delicate one, and the absence of complaints must be a proof

that the committee performed its duties in a spirit of fairness, and with knowledge. The purpose of the handicap, of whatever kind, is to place the average shot on something approaching equality with the expert, thus giving him a fighting chance to win out in the competition. The very poor shot cannot be considered, but must fight it out until constant practice brings its reward of increased skill. It is often stated that distance is not a handicap for the most expert shots, but a glance at a few scores made by such shooters as Fred Gilbert, W. R. Crosby, C. M. Powers, Lester German, and others, would seem to show that it does. Without question the expert at 20 to 22 yards will defeat an ordinary shot at 16 yards, but, they will not put up the scores they make from the shorter distance. In 1908, at the G. A. H., C. W. Powers broke 100 straight from 16 yards, at his handicap of 21 yards he scored 91, a loss of nearly 2 targets per yard. Woolfolk Henderson scored 98 at 16, and 94 at 19 yards, a loss of  $1\frac{1}{2}$  targets per yard. J. Graham got 96 at 16 and 91 at 19 yards, losing  $1\frac{1}{2}$  targets per yard. J. S. Fanning, with 98 at 16 yards, dropped to 87 at 18 yards, a loss of over 5 targets per yard. W. H. Heer, 97 at 16 and 86 at 22 yards, a loss of almost two targets per yard. W. R. Crosby seemed not to feel the handicap so much, as he broke 94 at 16 and 92 at 22 yards, less than one target per yard. J. R. Taylor got 90 at 16 and 83 at 22 yards, losing  $1\frac{1}{2}$  targets per yard.

This year a difference was also manifested. The practice day events and the G. A. H. were the only ones in which doubles did not figure in the totals. On Monday, L. J. Wade broke 99 in the morning and 96 in the afternoon from 16 yards. Shooting from his handicap of 19 yards, he broke 91, a loss of  $2\frac{3}{4}$  targets per yard over his first score,  $1\frac{1}{2}$  over his last score. J. R. Graham got 97 and 90 from 16 yards, from 20 yards he broke 91, a loss of  $1\frac{1}{2}$  targets per yard from his morning score. W. Henderson broke 96 from 16 yards and 93 from 19 yards, a loss of 1 target per yard. H. Dixon, with 96 from 16 yards dropped to 83 from 20 yards, a loss of  $3\frac{1}{4}$  targets per yard. Lester German, 100 from 16 yards, 84 from 21 yards, a loss of  $3\frac{1}{4}$  targets per yard. Fred Gilbert, 97 from 16 yards, 93 from 21 yards, a loss  $4\frac{1}{2}$  of a target per yard. Occasionally a shooter seems to do as well, or better, from the back marks, but these are exceptions. For instance, J. R. Livingston scored 95 from 16 yards and 96 from 19 yards. Mrs. Topperwein, 91 from 16 and the same from 19 yards. It is safe to state that, on an average, each yard from 16 back will cost the shooter close to 2 targets each.

The scores were higher than those of last year in similar events. The Preliminary in 1908 was at single targets, the event at doubles being extra. In the scores at 100 singles there were two 95's; two 94's; one 93; seven 92's; nine 91's and ten 90's.



## The Outer's Book

In the G. A. H., two 92's; six 91's, and seven 90's. In the amateur championship match, 18 yards, 200 singles, there were four each of 183, 182 and 179. The professional championship event, same conditions, had two 188's; two 187's, and three 186's. In the doubles, high score was 18, and there was only one; there were eight 16's, which was second high. In the G. A. H. this year, the only event in the program not having any doubles, there were four 96's; six 95's; seven 94's; twelve 93's; fifteen 92's; twenty 91's, and fourteen 90's. The championship matches at 200 targets from 18 yards, had two events at doubles. In the amateur match there was one straight score of 20 in the doubles; four of 19 and eight of 18. In the professional match, six scores of 19 and fourteen of 18. The winning amateur score was 188, second, 187, and third 185. In the professional match one score of 193; two of 191; one of 190 and two of 188. In the event at doubles on the first day, two straight scores were secured; six of 19 and eight of 18. In

the preliminary one score of 20, three of 19 and thirteen of 18 were recorded in the event at 10 pairs. These figures show a vast improvement over those of the previous year, and especially in the events at doubles, and are evidence that this style of shooting has received much attention from all shooters. The doubles were run off this year with little more expenditure of time than that required to shoot at 20 singles. The shooters went up in squads and shot down the line, instead of going to the score one at a time. The pairs were all thrown alike, a left and right quarterer. This style of shooting is most interesting to the spectators, and there was always a crowd at trap No. 3, where the double shooting was done; but it is decidedly not popular with the shooters, many of them stating that they would never attend another G. A. H. if doubles were a part of the program. Others were not so radical but the general opinion seemed to be that doubles should not be a part of the principal events. It would be much better to have one day, devoted to doubles shooting, say an event at 50 pairs. The shooters could then enter or not, as they saw fit, and would be under no compulsion to do so, as is the case now. The matter will be fully discussed at the annual meeting of the Association, and arranged satisfactorily.

The location of the 1910 G. A. H. will not be settled until the December meeting. The only city which got much boosting was Denver, Colo., and its claims and advantages were fully set forth by Mr. A. E. McKenzie. There was talk that Chicago would be chosen as the permanent home of the big event. There is nothing official in the rumor, of course, and many think it would be a great mistake to make such a ruling. Columbus would be the choice of a big majority of the shooters because of the excellent facilities, and the ease of reaching the grounds from the hotels. Indianapolis, also would be acceptable, as the club has proven its ability to handle a crowd successfully. Chicago has proved that it can round up a larger number of shooters than other places, and may have another chance. Cincinnati will be in shape this fall, to make a bid, and has the room on its new grounds to accommodate even a larger crowd than visited Chicago this year and in 1907.

The tournament this year was very successful, the number of starters in the G. A. H. lacked twenty-one shooters of equaling the high mark reached by the 1907 event, but with this exception was the largest ever held, since changes were made in the program. On Monday practice day, two 100-target events were scheduled, one in the morning and one in the afternoon. In previous years the practice has consisted of 100 target shot in the afternoon. Over 180 shooters took part in the practice work, 22 squads in the morning and 33 squads in the afternoon. The scores made were exceptionally good. In the morning J. R. Graham was high amateur with 97. J. R. Livingston, Jesse Young and Harvey Dixon tying for second on 95. L. I. Wade was high professional with 99, which included a run of the first 90 straight. J. S. Fanning was second with 97, and a run of 72. H. D. Freeman third with 96, breaking his last 60 straight. W. H. Heer 95. In the afternoon, Lester German broke 100 straight. H. D. Freeman, C. G. Spencer and Fred Gilbert were second high



FRED. SHATTUCK, COLUMBUS, O.,  
WINNER OF THE G. A. H.



professionals with 97 each. L. I. Wade, J. W. Garrett, R. R. Barber and H. C. Hirschy 96 each. High Amateurs were L. Ried, 98; Jesse Young and M. Hensler, 97 each; Woolfolk Henderson, F. Fuller, Joe Barth, Harvey Dixon, A. A. Winesburg and H. Dunvill, 96 each. Long runs were made by Jesse Young, 68; Joe Barth, 71; Fred Gilbert 64, and L. German 100. Squad No. 20, W. R. Crosby, L. German, Fred Gilbert, J. R. Taylor and W. Huff carried off the honors, breaking 99 in event No. 4, and missing only 24 targets out of 500 for the afternoon. The professionals, shooting both evening and afternoon program finished with L. I. Wade, 195; H. D. Freeman, 193; W. H. Heer, 190. Amateurs, Jesse Young, 192; W. Henderson, 191; Harvey Dixon, 190. 27,400 targets were trapped. It became known that Lester German was to be married to Miss Grace Pritchard, of Aberdeen, Mich., on July 1st, and he was the recipient of many congratulations and good wishes from the shooters, with whom he is a favorite. The day was cloudy, with several light showers, but none sufficient to stop the shooting.

On Tuesday, the first day of the tournament, the program was four events at 20 single targets each and one at 10 pairs. In all 314 shooters faced the traps. Shooting began at 9:50 and was stopped at 5:15. Owing to trouble with the traps, only three events were finished. The day was partly cloudy, and intensely hot. Wednesday the second day, was cloudy and hot with a fresh breeze. The Tuesday's program was finished about noon. Harvey Dixon was high amateur with 97; B. Dunnill 96; Jesse Young and Tom Graham, 95 each. High professionals, W. H. Heer, Mrs. Topperwein and Fred Gilbert, 96 each; J. W. Garrett and W. R. Crosby, 94 each; J. M. Hughes, L. S. German and C. G. Spencer, 93 each. High average honors for the day, computed on the 80 single targets, were divided between Mrs. Topperwein, professional and Bart Lewis, amateur, 79 each. In the event at doubles, Tom Graham and V. B. Asher were high with 20 straight, and were paid \$43.35 each. 32,980 targets were trapped. The Squad 7, H. I. Freeman, Mrs. Topperwein, Harvey Dixon, G. K. Mackie and W. Headerson, carried off squad honors, breaking 100 straight in the second event and 98 in the first event. Squad 5, G. A. Olsen, H. C. Hirschy, J. H. Stair, F. E. Rogers and H. W. Cadwallader, came second with 99 in the fifth event, the last man missing one target. The preliminary handicap was started at 11:25 and was about half finished at 5:15 when a halt was called. Seventy-five squads, 375 men, faced the traps in this event, ninety-one men, including the professionals, shooting for targets only. H. I. Hess made a straight in the doubles to-day, and this proved to be the only in the event.

Thursday, the third day, was sultry and threatening. The Preliminary Handicap was finished about 2 o'clock. The winner proved to be Frank Fisher, of Eagle Grove, Ia., on a score of 94. J. D. Cummings, V. B. Asher and H. Hopkins, 93 each; F. A. Hulshizer, 92. Fred Gilbert was high professional with 92; L. I. Wade, 91; W. Huff, R. R. Barber, H. McMinahay, and T. H. Keller, Jr., 90 each. 39,380 targets were trapped. The Grand American was started at 1:30 and the first event finished, and fourteen squads shot at 40 targets each, before shooting was stopped.



D. A. UPSON, CLEVELAND, O.,  
WINNER OF THE AMATEUR CHAMPIONSHIP

Friday, the last day of the tournament, according to schedule, was devoted entirely to the finish of the Grand American. The day was partly clear and cloudy, and very sultry. About noon a heavy thunder shower delayed the shooting for nearly an hour, and at 6:30 four squads still remained to finish, and were carried over to Saturday, as was the shootoff of the tie for first. There were 435 starters. J. R. Livingston, Springfield, Ala., was picked for a winner, as he had dropped but one target in the first 80, but he lost 3 in the last event, finishing with 96. Late in the afternoon G. E. Burns, of Cleveland, got into the tie. Then W. Wettleaf, of Nichols, Ia., made a grandstand play, and scored a total of 96 by breaking his last 20 straight. Fred Shattuck, Columbus, O., went to the score for his last 20 with a record of 4 misses. Showing no signs of nervousness, he broke straight and got into the charmed circle. Dr. W. Shattuck also had a chance to make the tie as he had a score of four 19's, but the strain was a little too much, and he lost a target finishing with 95. B. T. Cole had 76 out of the first 80, and a straight would have given him a chance for the prize. He got 19 in



the last round, making a total of 95. H. Hess divided second high amateur honors with the last two shooters on 95. K. P. Johnson was third on 94. D. Basstow was high professional on 95. R. O. Heikes, C. H. Ditto, H. D. Freeman, R. W. Clancy and L. J. Squir 94 each; F. Gilbert, W. Huff, H. McMursby and J. M. Hughes, 93 each. For the day 39,850 targets were trapped. Saturday, June 26, saw the finish. The day was sunny and hot, with no wind to help make the heat endurable. The remaining squads in the G. A. H. were called to the score at 9:20 and at 9:30 had finished without altering the results as recorded on Friday. The four tie men were called to trap No. 3 in front of the club house, and at 9:40, after Mr. Shaner had made his request for absolute quiet during the shootoff, started the final record to decide the winner of the big event. Mr. Paul North acted as referee, while Mr. E. E. Shaner scored. Livingston had bad luck and missed his first target, but pulled himself together and broke the other 19. Burns was the next one to fall, missing his 6th and 7th targets and finishing with 18. Wettleaf held out a little longer, loosing his 8th and 10th and 19th targets. Shattuck broke his 20 straight and won by 1 target over Livingston. He was surrounded by his friends and carried on the shoulders to the club house, amid applause and congratulations. The championship matches were begun at 10 o'clock and proceeded rapidly to a finish at 3:25. There were 66 entries in the amateur and 42 in the professional matches. Three of these were scratched, leaving 64 starters in the amateur and 41 in the professional, a total of 105. The match was at 200 targets, events No. 3 and No. 8 being at 10 pairs each. At the finish of the first 100, F. E. Foltz, an amateur, led the field with 98, W. H. Heer and J. R. Taylor, professionals, were second on 97 each. H. D. Gibbs, amateur, was the only shooter to make a straight at the doubles. D. A. Upson, Cleveland, Ohio, won the amateur championship, with 188, F. E. Foltz, McClure, Ohio, 187; Woolfolk Henderson, Lexington, Ky., 185. The professional championship was won by Fred Gilbert, Spirit Lake, Ia., on 193. W. H. Heer, and J. R. Taylor, 191 each; C. G. Spencer, 190. For the day 20,900 targets were trapped, making a total of 160,430 targets for the week's program. Squad 15, F. Gilbert, W. R. Crosby, W. H. Heer, C. G. Spencer and J. R. Taylor did nice work in the seventh event, breaking 99 out of 100.

The financial rewards for skill were worth while. In the Preliminary the purse amounted to \$1,520. Sixty-two shooters in the money, lowest score to get in was 87. First money, \$152.00. The three 93's got \$121.60 each. The 87's got \$5.60 each. Grand American purse, \$4,053.00. Sixty-four shooters in distribution. First money, \$405.30; second, \$364.75 third, \$324.25; fourth \$283.75. These four moneys to the 96's, in order of finish in the shootoff. Next six moneys to the 95's, \$148.65 each. Seven 94's received \$63.80 each; thirteen 93's and fourteen 92's each received \$40.50, and twenty 91's got \$12.15 each.

Amateur purse, \$1,256.00. Fourteen places, 177 being lowest score to get in the money. First \$226.10; last three moneys \$25.10 each. Professional purse, \$772.00, twelve places, 182 lowest



FRED. GILBERT, SPIRIT LAKE, IA.,  
WINNER OF THE PROFESSIONAL CHAMPIONSHIP

score to get in the money. First, \$169.85. Two 191's got \$123.50 each. Last four moneys to the 182's, \$13.50 each.

A brief summary of the Grand American may prove of interest and value. The event was first held in 1900, at Interstate Park, Queens, Long Island, New York, June 12, with 74 starters. Rolla O. Heikes, 22 yards, score 91. 1901, same place, July 18, 75 starters, E. C. Griffiths, 19 yards, score 95. 1902, same place, May 8, 91 starters, Charles Floyd, 18 yards, score 94. 1903, Kansas City, Neb., 179 starters, M. Diefenderfer, 16 yards, score 94. 1904, June 23, Indianapolis, 317 starters, R. D. Guptill, 19 yards, score 96. Tied by W. M. Randall, 17 yards. Three shootoffs necessary to decide, Guptill 17, 17, 19; Randall 17, 17, 15. 1905, same place, June 29, 333 starters, R. R. Barber, 16 yards, score 99. 1906, same place, June 21, 268 starters, F. E. Rogers, 17 yards, 94. 1907, Chicago, June 20-21, 456 starters, J. J. Blanks, 17 yards, score 96. Tied by C. M. Powers, 20 yards, and M. J. Margott, 18 yards, shootoff, Blanks 18, Margott, 17, Powers 15. 1908, Columbus, June 25-26, 336 starters, Fred Harlow, 16 yards, score 92. Tied by Woolfolk Henderson, 19 yards. Shootoff, Harlow 18, Henderson 17. 1909, Chicago, June 25-26, 435 starters, Fred Shattuck, 18 yards, score 96. Tied by J. R. Livingston, 19 yards, W. Wettleaf, 19 yards, and G. E. Burns, 16 yards. Shootoff, Shattuck 20, J. R. Livingston 19, Burns 18, Wettleaf 17.



# ANSWERS TO CORRESPONDENTS

## SPRINGFIELD vs. WINCHESTER

EDITOR GUN DEPARTMENT: I have taken great interest in the various articles on bolt action rifles which have appeared in the Outer's Book, and am prompted to write this by an article in the July number written by Mr. Newton. In this article, a comparison is made of the strength of the new Springfield and the Winchester 1886 model. I do not own either of these rifles at present, but did own the Winchester, in .33 caliber up to about six years ago, and whatever figures I mention below are given from memory only. In Mr. Newton's comparison of these rifles he undoubtedly selects the weakest point of the Springfield for the purpose, but he does not do this in the case of the Winchester, as any one familiar with this arm will know. It is entirely improbable in case of an arm of this construction bursting that the two locking bolts would shear in a direction parallel with the bore, and consequently the measurements for a comparison should not be taken at this point. I believe that this arm would undoubtedly break at a point of the receiver where the metal is cut out to receive the above bolts, and not the bolts themselves. If this point, or rather, these points of the Winchester were used to compare the amount of metal resisting the force of the explosion, it will be found that the cross section of same is not much greater than in the Springfield, probably about  $\frac{3}{16}$ " x 1" on each side of receiver, or about  $\frac{1}{2}$  square inch, which is only a little more than the cross section of the two lugs on the bolt of the Springfield, as given by Mr. Newton. If a comparison of the strength of these two arms is to be made on a basis of the amounts of metal opposing the opening of the breech, then the weakest point must be selected in each, and that point, in the Winchester, is as stated above. I do not, however, believe that this comparison has any value, on account of the difference in the quality of the steel used in the two arms. I have understood that the United States Government has made exhaustive tests to find a superior steel for the new Springfield, and that they have a steel much superior to the nickel steel which I believe is used by the Winchester Co. I understand the Springfield costs \$18.00 to manufacture, and that the materials used in it is what brings this cost so high. Now the Winchester model 1886, in .33 caliber retails for \$20.00. How much does it cost to manufacture? Perhaps \$6.00, but probably not over \$5.00, and at such a cost, it is not possible that the same grade of material is used as in the Springfield, even though some of the difference in cost may be due to the high rate paid by the government for labor. Some will say that I place the cost of the Winchester too low, but I am well versed in such matters, and my own estimate is lower than I have stated above. Manufacturing costs are often as low as 15 or 20 per cent of the retail price, especially in the case of widely advertised articles, and to show that the above cost is not so out of proportion, I will give below the comparative costs and retail prices

of some articles which I know are correct, although I will not name the articles, simply saying that they are made of metal and wood, and that the labor is of as high a grade as is required in gun making. One article, which retails for \$5.00, widely advertised, costs 74 cents to manufacture, and of this amount 22 cents goes for the plush lined box in which it comes. Another article, retails for \$40.00, also widely advertised, costs \$7.42 to manufacture, and this cost includes an allowance for royalties, and depreciation on the machinery used. Also, one part of the above, which is sold separately, retails for \$5.00 and costs 62 cents to manufacture. None of the above articles are monopolies, all have several competitors, and consequently may be considered as probably having a ratio of cost to selling price nearly the same as fire arms. This article was prompted by the result obtained by Mr. Newton's comparison, when he claims the Winchester to be five times as strong as the Springfield, and, for the reasons I have given, I believe that if a test could be made, the Springfield would hold together at a pressure a long way above the Winchester. At any rate, the latter is certainly not five times as strong, if the measurements taken for comparison are those I have indicated.

J. E. TAYLOR.

## THE SPRINGFIELD FOR HUNTING

EDITOR GUN DEPARTMENT: I am writing to get your opinion on this question: Would you consider the new Springfield government rifle a proper gun for deer and moose hunting? Hoping to get opinions from some experts, I remain, respectfully,  
A SUBSCRIBER.

[Your letter has furnished me with an interesting topic for an article, which I am sure will be of interest to a great number of other thinking riflemen, and when I have gathered sufficient data, I shall treat the subject at length in a future number of the Outer's Book. I have hunted with the old Springfield with the 32 inch barrel, the Krag with the 30-inch, several military carbines, and while uniformly successful with all of them, the new Springfield, to my mind, more nearly approaches what might be considered the hunting type of arm than any of the others. You might, however, wish to make some changes in the sights, for deer hunting. It would not be difficult to substitute an ivory bead front sight for the steel military. I would suggest, however, that no matter what sights you decide to use, sight your weapon very carefully at an average hunting range for the game which you intend to hunt. The rear sight of the N. S. is so graduated that when the leaf stands vertical it can be adjusted as low as one hundred yards. When folded down on the sight base it shows the bottle sight only. If this is used for hunting, it would be necessary to hold low on the game, as the rifle, when used with the bottle sight, is sighted for 530 yards. If you can arrange the sights to your own



satisfaction, I assume you wish to do so without in any way changing the character of the arm. You will have as good a hunting arm as any one could wish. The 1903 Rimless cartridge is a favorite of mine, in a model 1895 Winchester. For hunting purposes I use the regular 220 grain bullet both full and half mantle. I would suggest that you find the zero of your rifle and secure it there, also set your hunting elevation under 200 yards, as there is very few deer or moose killed over that range.—R. A. K.]

### RELOADING A .25-20

EDITOR GUN DEPARTMENT: I would like to have you tell me through the magazine how a .25-20 single shot rifle of Stevens make would be for reloading purposes, and at what game the killing power of factory loads smokeless powder soft point eight full patched, would be effective. Yours, F. PEAT.

[You may reload the .25-20 single shot for the Stevens, or any other single shot rifle, with great success. This will not only give you an infinite variety of loads, but your ammunition will be comparatively inexpensive. You may use any of the following powders to load the .25-20 single shot. Smokeless, 4 grains by weight, Unique 7 grains, weight, Marksman or DuPont's No. 1 Black, 17 grains weight, F. F. G. or 13 grains weight King's semi-smokeless. With a 73 grain bullet very satisfactory target work may be done up to 200 yards in the absence of wind. All small game up to deer may be killed with the .25-20, and even they have been bagged with a lucky shot, properly placed. I would not, however, recommend the .25-20 for deer hunting. The .25-20 single shot is not intended for metal patched bullets, nor are they necessary. Metal patched bullets are used in the .25-35 cartridges of various makes. They are very rangy and powerful.—R. A. K.]

### NOT ALL ONE WAY

EDITOR GUN DEPARTMENT: The various articles appearing lately in the "Arms and Ammunition Department" of the Outer's Book have in my humble opinion greatly added to the value of your publication and I look forward each month to receiving the next issue.

I have for some time been interested in the controversy going on in other publications regarding the relative merits of American and foreign rifles.

As the result of Mr. Crossman's article you are doubtless receiving from your readers the usual missives conveying the readers' opinions of the various arms under discussion, giving their opinion of a man who will be so unpatriotic as to praise foreign products to the detriment of American goods, etc., and I hope that those of your readers who disagree with Mr. Crossman will refrain from personal abuse and will give reasons instead of merely stating personal preferences.

Without entering into a discussion with Mr. Crossman relative to the merits of the various forms of breech mechanism under discussion, it seems to me as though Mr. Crossman were losing sight of the fact that one of his chief arguments will look equally well on the other side of the fence.

Before going any further, I desire to state that I own an 8 m.m. Sauer-Mausers, a Winchester 30-30 Model 1894, carbine and a 7-m.m. Remington single shot. I firmly believe that the Mauser has the strongest breech lock of the three arms mentioned and I only mention the arms owned by me so that you may know where I stand with reference to the arms under discussion in Mr. Crossman's article.

The statement I take exception to or rather call your attention to is on page 488 of the May number and reads as follows: "Of course, if you believe that steel is now made without flaws and will never break if it does not show a flaw when it is made, you will be perfectly happy with a rifle locked in this way, etc." Suppose that the steel in one or more of the three locking lugs in my Mauser should get tired and give up its job at the moment that I pressed the trigger, don't you think I would be likely to go home in a pine box? I know its a mean trick to "pick up" Mr. Crossman in this way, but that is the nature of the "baste."

In conclusion I desire to say that I believe that a man armed with and accustomed to a bolt gun can fire as many aimed shots per minute as the man with a lever action and to prove this I need only point to the work done by our Regulars and our National Guard at the disappearing targets on the range. On the other hand, I believe that the man with a lever action rifle having the hammer at half cock (or in the case of the Savage the safety on) can have his weapon ready for business quicker than the man armed with a Sauer-Mausers having the lock secured. Yours very truly,

A GUN CRANK.

### PRIMERS AND LOADS

EDITOR GUN DEPARTMENT: I have at hand your kind reply to my questions in regard to loads for my .30 Rimless and I am now going to trouble you again. I would like to know what primer to use for the .38 Automatic Colt's. The Ideal Hand Book, if I remember rightly, gives the 1½W Winchester and 6 U. M. C. but as you do not include these in the non-mercuric primers, I am afraid to use them. I would also like to know what you think of a load of four to six grains of "Du Pont No. 2" smokeless with the 125 grain Ideal bullet for a sort of short range load. I do not suppose the pistol would repeat automatically but it would not be much trouble to operate it by hand. In regard to full loads for the .30 Rimless, I contemplate using 40 and 45 grains of .30 W. A. with the 180 grain .303 Savage bullet and the 215 grain .303 British bullet respectively. Do you think these loads would be too great? My gun is a '95 Winchester. As I did not send direct to the factory, I have had considerable delay in getting moulds and reloading tools but have secured several cans of powder and one thousand No. 9 U. M. C. primers. I am using the Maxim Silencer and find that it certainly adds greatly to the pleasure of shooting. Thanking you for the information given me, I remain, Yours respectfully,

FRANK TRASK.

[I do not think there is any non-mercuric primer made to fit the .38 Colt automatic shell. The non-mercuric primers as now made are the U. S. No. 2½, the U. M. C. No. 9, and the H.48 Gov't. These will fit the same shells as the U. M. C. Nos. 2½, 7½, 8½, the Winchester 2½, 2½W., and 5, and the Peters



2½ and 2½ S. This list covers a great number and variety of shells. You need have no fear of using shells, taking the mercuric primers, if you wash them carefully immediately after firing. They should be decapped, washed in boiling water, and dried thoroughly. Usually the heat retained after immersion in boiling water will dry the shells if they are kept moving so that the water may drip from them. Do not subject the shells to a heat sufficient to draw the temper. A good load for your .38 Colt automatic pistol would be three (3) grains of Bulls-eye powder. Four (4) to six (6) grains Dupont No. 2 will work well. You may always reduce the charge with safety, but increases should be made a fraction of a grain at a time. Your automatic Colt pistol should not be expected to function with a reduced load. The full load for the .30 Rimless is .45 grains 30 W. A. powder, and 36.2 grains for the 30-40 or Krag. This is when the regular 220 grain bullet is used. The 303 Savage and British bullets being lighter, may be used with perfect safety. In varying the charges of powder watch the performance of the bullet.

I am pleased to note that you are using the Maxim Silencer. I consider it an important step in the development of rifled arms, and would be greatly pleased to have you record your impressions of the silencer from a rifleman's viewpoint, for the benefit of the readers of this journal. Every rifleman is interested in the experiences of other rifleman. Therefore, we welcome them all, whether it is to give or receive information. Come again. R.A.K.]

### MORE ITHACA PRAISE

EDITOR GUN DEPARTMENT: If you will kindly permit of a little space in your valuable journal, I would be pleased to acquaint a number of my sporting brothers my experience with the double-barrel Ithaca gun. A few months since the Ithaca was practically unknown in my immediate vicinity, but having used their gun fifteen years ago, I ordered one made after my own specifications,—which, by the way, was exactly as ordered—and same has been given a thorough trying out, both in field and at blue rocks. At the latter, I do not think they have an equal. Their close shooting and exceptionally quick locks always insures a good score. After trying out my gun to their thorough satisfaction a great many of the boys in our Gun Club have placed orders with the Ithaca people and those that have Ithaca guns are well pleased. To see and use them, is certainly the best way to appreciate their many good qualities. I sincerely believe they are the best guns made in the United States, and I have found that they are all and more than the manufacturers claim for them. Would also like to mention, that you will get a square deal from the Ithaca Gun Co. Yours truly,

D. S. CLARK.

### THE LIFE OF A BARREL

EDITOR GUN DEPARTMENT: I read the Outer's Book regularly, and I must say that you are publishing a most excellent magazine. The only way I can see to make it more satisfactory would be to publish it twice a month. Mr. Kane of the Gun Department seems to be a very reliable authority on fire arms, and willing to answer questions.

Therefore, I take the liberty of asking a few. What is the life of the Winchester .33 barrel? About how many shots will it stand and still do accurate shooting if the bullets are gas tight, and how is it as a big game hunting arm? Yours truly,

A READER.

[It is a pretty well established fact that more guns are allowed to rust out than are shot or worn out. Assuming that the .33 is properly bored, and cared for, its life as a hunting arm is practically unlimited. The life of barrels, like the .30 military having a 10-inch twist intended for bullets with the nickel steel mantle, is considered to be from two to five thousand rounds. The .33 barrel has a 12-inch twist and takes a copper mantled bullet. Consequently there is less wear than with a barrel having a quicker twist and shooting bullets with a hard steel mantle. The life of military barrels is said to be from two to five thousand rounds. Using this as a basis for our calculation, it would seem that the life of the .33 barrel should be at least one-third longer. Three years ago I sighted a .33 Winchester rifle for a hunter. It was said to have been fired over three thousand times. Compared with a new .33 sighted at the same time, and under identical conditions, sights, etc., I could detect no falling off of accuracy or speed in the older weapon. I have sighted many rifles of this particular caliber, and have invariably found them to possess great accuracy. In sighting a .33 I once fired two shots at twenty-five yards, three at fifty, five at one hundred, five at one hundred and twenty-five, and five at one hundred and fifty. By increasing the elevation slightly at each firing point, and shooting from a rest, I was able to keep all the shots well inside of a black bullseye four inches in diameter. The sights used were an ivory bead hunting sight and a Lyman combination rear. While there are other cartridges that have greater range and penetration, and would in some territory be more desirable, you need have no hesitation to put your trust in the .33 anywhere on the American continent. It is much favored as a hunting arm in Wisconsin, Michigan, and Minnesota. R. A. K.]

### THE REMINGTON .22

EDITOR GUN DEPARTMENT: Will the Remington No. 2 .22 caliber single shot rifle handle the U. M. C. .22 extra long cartridge? About what is the difference, if any, in shooting qualities if the Winchester model 1906 rifle having a 20-inch barrel, and rifle having 24 or 26-inch barrels? Yours truly,

S. C. SHENK.

[The Remington No. 2 rifle is not chambered regularly for the .22 extra long cartridge. It is chambered for the .22 short, long, or long rifle cartridges. Any single shot rifle chambered for the .22 long rifle cartridge will take the .22 short, .22 long, .22 long rifle or .22 U. S. Armory cartridges. They will not take the .22 extra long. There is a slight advantage in results obtained from 24 and 26-inch barrels as compared with the 20-inch barrel. Much of this is due to the greater weight, and length of the sighting plane of the longer barrels. I am inclined to think that the difference of performance is more noticeable while using black powder ammunition. Either length will give satisfactory results up to the practical limit of range for the .22 cartridge. R. A. K.]



# SELECTING THAT RIFLE

## PART II

By EDWARD C. CROSSMAN

FOR the man who does not care for a battery of rifles, yet who wants a rifle that will do for all round use, powerful enough for deer, mountain lion, black bear—in fact every sort of game found in this country, with the possible exception of the grizzly—whose very existence in these days has been disputed by the scientific sharps,—the .32-40 offers the nearest approach to perfection. For a trip, for instance to visit some relative on a ranch "out west" where you may find deer or bear, where you will certainly find coyotes and where even the long eared jack-rabbit offers temptations to the good marksman, the 32-40 rifle will prove itself to be the best all-round rifle made.

The standard rifling of the .32-40 rifle being one turn in sixteen inches of the barrel, against one turn in ten inches for such cartridges as the .30-30 and .303, the owner can use soft lead bullets—pure lead if he so desires—with a hurry-up charge behind them, and not have any fear as to leading his rifle from the soft bullets not taking the twist of the rifling. The U. M. C. Co. give the accuracy limit of the bullet at from 700 to 800 yards, practically half a mile, using the "high power" cartridges made for this caliber. The man who has once used the 32-40 as an all round rifle cannot be persuaded to back to any other cartridge,—unless he wishes to hunt the largest sort of game or wants to shoot at the extreme military ranges.

The other cartridges of *this power*, should not be considered, from the stand-point of the one-gun man. The bottle neck cartridge and quick turn of the rifling make them hard to reload, particularly for the novice, and no other rifle possesses such flexibility as to the loads used. The .32 "Special" is a fraud and a snare, in that it is simply a 32-40 with the added disadvantage of being a bottle-neck shell and having but few cartridges turned out for it by the factories, in case the owner does not care to reload for his smaller game and short range shooting. It is less powerful than the 32-40, and while 32-40 cartridges may be purchased anywhere, it being one of the oldest cartridges on the market, the .32 Special cartridges are much harder to obtain in the smaller towns. There are but two or three factory cartridges made for this rifle, while for the 32-40 there are more than half a dozen, giving the user his choice of loads large enough for bear, to loads suitable for shooting your neighbor's cat off the back fence with the minimum of fuss—both at the time of the crime and later when the victim is discovered.

We have not touched upon the automatic tribe of rifles. A book might be made of the arguments pro and con this breed, but it is only necessary in this paper to point out a few of the defects which make

them undesirable for the one-gun man and then pass on.

Automatic rifles are made by two of our largest rifle factories and are of two distinct types, one having a movable barrel and an additional cover over it on which are fixed the sights. The other has a fixed barrel and depends upon the inertia of a heavy breech bolt and the resistance of the retractor spring to take the pressure of the gases of the explosion. One rifle is as clumsy in appearance and make-up as a rifle could well be, and still be a rifle, but it is made for powerful cartridges. The other is made in neat lines, without the additional barrel of its rival, but it is made for cartridges which are lacking in power for hunting big game. As all round rifles no automatic tribe has any claim to consideration whatever. They cannot be operated by any but the regular service load,—light loads will not function them. Empty shells [for reloading cannot be purchased at all and the owner of one of these rifles must depend upon reloading the factory shells after he has fired them, although he may not wish to purchase expensive factory ammunition and fire it merely to obtain the empty shells. All of the automatic tribe are too heavy excepting the .22 made by one of the factories.

The .22 automatic is a fine little rifle for the man with half a dozen guns but again is not the rifle for the man with but one. Ammunition for the greedy little beast costs just twice as much as the long rifle cartridges for the ordinary .22 repeater, and more than twice as much as the .22 shorts. It is not all well made—as far as the rifleman is concerned—having a little short, stubby stock, evidently made for some six year old child instead of a man. Simply because a rifle is of a small, light caliber is no reason why it should be turned out with stock, weight and balance all deficient.

The .35 automatic with the moving barrel, while one of the most hideous beasts of arms on the market, is a splendid arm for big game where rapidity of fire is a desideratum, hitting hard, fearful blows and hitting them as fast as you can pull the trigger. It undoubtedly has a place in the armory of the gun crank or the man who hunts big game every year, but the man who is looking for but one rifle, and who admires a rifle for its own sake as well as for its murderous qualities, will not be interested in the automatic. The writer knows of nothing more conducive to slovenly shooting, to inaccuracy and carelessness in placing the first shot, than an automatic, either rifle, pistol, or shotgun. The additional shots at the users disposal seem to be continually yelping "hurry up and fire us! Hurry up and fire us!" and nine times out of ten the owner proceeds to do so with all speed. This is



not theorizing, but personal experience. The writer has "been there" and has watched others use these arms besides.

As a rule, the line between large-bore and small-bore, cartridges is drawn at the .35 caliber and should be properly drawn at the .33. All cartridges over the .35 are "big-bore" cartridges, all under this are small-bore, either light or medium strength cartridges, like the 32-20, etc., or else of the modern high power, high pressure, military type. Among the latter may be mentioned the 6 m.m. Navy—the "m.m." by the way standing for millimeters, the foreign way of measuring cartridges—the 7 m.m. Mauser; the 7.65 m.m. Mauser; the 8 m.m. Mauser and Mannlicher; the .30-40 U. S. A.; the old Krag-Jorgenson food; the 30-45, used for a time in our new army rifles, the new Springfield; the Model of 1906, .30 caliber, with sharp point bullet; the .303 British and the various modifications of these cartridges in the way of sharper pointed bullets, etc. These are all of the pure military type but have been found to be splendid for big game shooting on account of their power and their accuracy. In addition to these cartridges, there are the purely sporting, high pressure, small bore breed, modifications of the original military small bore, high pressure idea. These include the 25-36 and the 25-35, twin cartridges, using a bullet weighing 117 grains, having a very flat trajectory and power enough for deer and similar game. Other cartridges are the well known 30-30; the .303 Savage, which must not be confused with the .303 British; the 32-40 high power; the .32 Special; the .33 Winchester; the .35 Winchester; and the 9 m.m. Mauser and Mannlicher. In addition to these, are the various cartridges for the automatic rifles, only those for the moving barrel type coming under the head of small-bore, high-pressure loads.

The large bores include the hundred and one modifications of the old black powder cartridges, the only large bore, strictly modern cartridge being the .405 Winchester, a terrific hitting cartridge, but not advisable for target practice or for teaching your best girl how to shoot a rifle. The others are simply patched up remnants of the black powder—prehistoric days. The big bore rifle is splendid for hitting a tremendous blow at short range, and will be a favorite for years with hunters who shoot at close range, in the woods where they could not see their quarry more than a hundred yards away even if they desired to shoot further. At the long ranges, due to the air resistance and the poor shape of the bullet, the big bores are outclassed by the modern small bore types.

Some of the modern forms of big bore cartridges are loaded to give high velocity, velocities approaching those of the modern small bore cartridges. These are far from being accurate at the long ranges, being simply "express" cartridges designed for game shooting at short range. The former express cartridges were loaded with a light bullet and terrific charge of powder, the idea being to gain the flat trajectory obtained in the present day by the small-bore, high-pressure idea. The express tribe were however, lacking in accuracy to a sad degree, it being impossible to get a decent group of shots at ranges over 200 yards. The modern idea of making these large bore bullets with metal patched jackets and driving them at high speed with heavy charges of smokeless powders, makes them in effect, simply

express cartridges again, the bullets being short for their diameter and the accuracy being accordingly poor. The big bore cartridges are very good for certain purposes, such as shooting animals in thick woods at close range, where it is desired to tear a hole the size of a bucket in your soft flesh game to drop it in its tracks. If the quarry be of the tough persuasion, moose, cinnamon bear, etc., your hole is likely not to materialize on account of there being too much resistance and the bullet assuming its dinner-plate form, which it is so anxious to do.

Among the most popular of the big-bore persuasion are the good old .45-70-405; the same cartridge with 350 grain bullet, and the modification using the .330 grain hollow point bullet designed by Gould, and which has proven itself to be an exception to the other express types of cartridges, in being very accurate. The .45-90 is another popular cartridge and the cannon-like 50-110 has found much favor in the eyes of those who like to scare the game to death before they pull the trigger. The .40-70-330 is another splendid big-bore cartridge, while the .38 calibers include two or three desirable loads for the open countenance type of rifle.

For the man who has a trip, perhaps to the Kadiak bear country, in his mind for the near future, or who hopes to meet the moose in his very lair at no distant date; who likes to shoot at long range, either the blank, expressionless 1,000 yard target or perhaps at a coyote trotting serenely along where he fancies danger is absent, there is nothing finer than one of the cartridges designed and evolved by Uncle Sam in the past 15 years. These include the 30-40, the 30-45 rimless, adapted to the New Springfield Model of 1903, and the latest of all, the 1906, .30 caliber with sharp pointed, Spitzer type of bullet.

No cartridge made has received so much careful attention from expert shots, and the government and private factories alike, as the 30-40, the Krag cartridge. Originally as vile a shooting cartridge as was ever turned out, through poor fitting bullets, dirty, poor powder and poor fitting rifles, it has been developed into probably the finest small bore cartridge in the world. With this cartridge and the sharp pointed "Hudson-Thomas" bullet our team of riflemen won the Palma Trophy, the blue ribbon of the shooting world, from the English, Canadian and Australian rifle teams in 1907. The scores made at this shoot have never been equalled since, proving the wonderful accuracy of this load at the long ranges, half a mile or more. There are dozens and dozens of different cast bullets listed for the man who likes to reload his shells—as he should do to get the good out of his rifle, and to learn its capabilities. The ammunition is obtainable anywhere—sometimes very cheaply, too, if the purchaser knows *where* to go for it. With soft point bullet, the 30-40 is strong enough for any game on this continent and the owner has besides a rifle that is accurate to the last degree for target shooting.

The 30-45 is a more powerful cartridge than the 30-40, using some 44 grains of powder against 34 for the 30-40, but using the same bullet.

This cartridge was designed for the new army rifle, being made rimless and adapted to the clip-loading idea used at present in the Mauser, Lee straight-pull and New Springfield of our own army. All of the bullets designed for the 30-40 are suited to this cartridge as well, and for big game it strikes



a harder blow than the 30-40, being for this reason, perhaps preferable. The ammunition however is not so easily obtained in the smaller towns about the country.

The present government cartridge, known as the "Model of 1906," bids fair to become one of the best cartridges ever turned out but it has not "struck its gait" up to the present time. It will doubtless be changed and improved in the next two years, as the writer at the Government School of Musketry, saw the trial of a new form of bullet, even more pointed than the one now in use, and there is evidence that there will be changes in the ammunition or the rifle, or both, shortly. The present cartridge, burning some 49 grains smokeless powder behind its 150 grain bullet, speeds the bullet through the air at the rate of 2750 feet per second, 30 per cent faster than the 30-40 bullet. This results in a flat path for the bullet, while the sharp point, cutting down air pressure, helps it to hold its speed at the long ranges. The terrific speed of the bullet, however, results in "metal fouling" being deposited in the barrel to a great extent, and there is constant trouble from this cause. Metal fouling is simply pure copper from the jacket of the bullet, left in the bore of the rifle from the friction of the bullet on the sides of the bore, or from the escape of gases past the bullet, or both. A deposit of this sort, requires the use of ammonia preparations to remove, and endless trouble and swabbing.

It is likely that some change in the twist of the rifling will take place or that the bullet will be changed in composition to avoid this trouble, and the prospective buyer will do well to "bide a wee" until the government and the target shooting sharps have worked out the new cartridge to its ultimate perfection. With its terrific speed, the new cartridge should give "shocking" effects on game, using soft nose bullets. Those who have used the rifle on game declare it to be the best arm for game shooting yet produced.

The 7, 7.65, and 8 m.m. cartridges are all splendid for game shooting but are only made for foreign rifles, such as the Mauser or Mannlicher.

The type of rifle purchased will depend more upon the cartridge than upon any choice the purchaser may have. The .22 can be purchased in any American make. The writer's choice is the Marlin 1897 Model, but it is the most expensive of all the .22 caliber rifles made. The 32-40 cartridge can likewise be used in rifles made by any of the standard American makers of rifles, the purchaser only being careful to see that the barrel is of *nickel steel* or "hi-pressure" steel as the makers variously call their nickel steel barrels. Some of the makers still turn out their 32-40 rifles with *soft steel* barrels adapted to black powder and low pressure smokeless ammunition. The High Power cartridges cannot be used in these soft steel rifles as the pressures developed are too great.

The large bore cartridges can be obtained in two standard American make of rifles. It is to be regretted, however, that but one American company, making repeating rifles, has been up to date enough to keep pace with the modern progress in cartridge making. There is but one American factory turning out repeating rifles for the military type of cartridge, such as the 30-40, 30-45, etc., and the company deserves all credit for its progressiveness in this respect. The Winchester Model of 1895,

commonly known as the "Box Magazine" rifle is the only one made for these military and highly desirable cartridges. The Savage and Marlin are both of them splendid rifles, but unfortunately they are made only for the cartridges of the 30-30 and 32-40 class, of the modern small bore type, and the big-bore cartridges of the older style. The box magazine rifle is made for the 30-40, 30-45 and the Model of 1906 ammunition. The writer does not fancy this style of mechanism for such powerful cartridges, but it is a great favorite among hunters and has given entire satisfaction.

Personally, the writer is partial to the bolt action type of rifles, "bolt action" meaning rifles using the mechanism of the Mauser, Mannlicher, Lee or Krag-Jorgenson type. The Mauser bolt was taken in its entirety for our new army rifle, and it is undoubtedly the strongest, simplest and most reliable form of breech mechanism known. With the exception of the Lee-Remington and the Lee straight pull rifles, still remaining in the stocks of the dealers about the country, the bolt action rifle is not obtainable in American manufacture, something that is hard to understand, considering the manifest advantages possessed by this type and the fact that it has been adopted by every civilized government on earth for military use. A bolt action rifle of the Mauser type can be taken apart with the *fingers alone*, until there is nothing left to it but the component pieces of the bolt and magazine, and the rifle, stripped as bare as a walking stick. The bolt and magazine can be taken out of the rifle and taken to pieces with the fingers in twenty seconds. Some American makes of rifles could not be taken to pieces in as many *minutes* and would require half a dozen tools, all of which you of course, would carry along with you on a hunting trip into the wilds. It is necessary to go abroad to get the bolt action, hunting rifle, and they cost more, but the extra money is well expended if you are a gun lover and can appreciate fine hand-finish on a firearm. The lack of small parts, the simplicity of mechanism, its sureness and strength and the fine balance of the foreign-made, bolt action rifles make them worth the added cost to the man who knows. The writer's idea of a perfect rifle would be a Sauer-Mauser bored for the Model of 1906 cartridge. The 8 m.m. cartridge, however, is a splendid one, and the fact that all of the 32-40 series of bullets, from the metal-patched, to the cast short range variety, fit this caliber, makes it particularly valuable to the American gun crank. The power of the 8 m.m. is greater than any American small bore cartridge made, with the exception of the .35, just on the dividing line between large and small bore. As compared with the 30-40, the figures are as follows: 8 m.m., weight of bullet 236 grains, initial velocity, 2129 feet sec; energy developed at the muzzle of the rifle by the bullet, 2376 ft. lbs., height above the level at 100 yards, when rifle is fired at a mark 200 yards away, 5.67 inches. 30-40, weight of bullet 220 grains; initial velocity 2005 feet per second, energy at muzzle, 1972 foot lbs., height at 100 yards when shooting at 200, 5.41 inches.

The ideal rifle, if in the 32-40 caliber, should weigh not to exceed 7 pounds, and not more than 7½ pounds, if for the heavier, military type of cartridges. The foreigners are ahead of us in this respect, that they cut off all the useless, dead-weight



of a rifle and still have it strong where it is necessary. Our rifles are too heavy unnecessarily so. The rifle should have a round barrel—never an octagonal one. The octagon barrels weigh from  $\frac{1}{4}$  to  $\frac{1}{2}$  pound more than the round barrels, the bluing of the barrel wears off the sharp corners in a month, and the sharp corners become dented at the slightest provocation. The rifle should have a pistol grip and checkered stock and fore-end. If you are inclined to spend any more money than the regular price of the rifle, instead of getting a finely figured—and heavy—stock, have one made to your order, to fit you so your eye will fall along the sights without craning down your head or “histing” up your elbow. It should have a shot gun butt, plate steel and cross-lined to prevent it from slipping. The shot gun butt is particularly necessary on a rifle with a heavy recoil, like the 8 m.m. or the 30-45. The curved rifle butt is an abomination and a snare. Even if it fits you, the recoil all comes on the two inches at the bottom of the crescent, and if it does not fit you, you will get the pound of the rifle on one of the “horns” of the curved plate.

The barrel should not be over 24 inches long. This is the length of the barrel of the new army rifle and as our Olympic team wiped up the ground with all sorts of foreign teams at Bisley, using this rifle last year, it is evidently accurate enough for the ordinary man.

It should be a take-down rifle, if of the lever persuasion. This not so much for convenience in carrying, as for the purpose of cleaning the rifle from the breech, as it should be cleaned—and must be, if you expect to keep your rifle accurate for any time. There is no quicker way to destroy its accuracy than to clean it from the muzzle, rub the cleaning rod against the sharp lands at the muzzle, wear them down, and then have a bullet leave the muzzle pointing in some direction except the way it should. This is one great argument in favor of the bolt action over the box magazine American type, the bolt can be slipped out of the rifle as easily as you could take a cartridge out, and then you have your rifle clear and unencumbered for cleaning from the breech. Durance vile in the guardhouse awaits any soldier who persists in cleaning his rifle from the muzzle, Uncle Sam well knows the effect of this.

The trigger pull should not be over 4 pounds. This is born out by the fact that Uncle Sam's service rifle has but a 3 pounds pull. Anything over 4 pounds is but that much imposition on your trigger finger and results in a tendency to jerk the trigger if you are in a hurry. The rifle should have a sling strap if you intend hiking it in the rough country. It is a great help in carrying and an aid to steady off-hand aiming if you are not in a hurry. An adaption of the army “Shaw” sling would add ten dollars to the value of the rifle for practical use.

Knock off the open sight of the rifle—and don't look to see where it fell. The peep or the telescope is the only sight worth considering for any purpose. The peep can be obtained for any rifle under the sun if you will give the makers of the sights, an

idea of what you want. The telescope is coming into favor more and more. The experience of Major Powell Cotton, the English big game hunter and explorer, in Africa, using a telescope sight on a 6 $\frac{1}{2}$  m.m. Mannlicher and killing all sorts of game from hippopotamus, rhinoceros and lion down to jackal and monkey, is sufficient proof of the feasibility of the telescope on a hunting rifle. Big game shooting in Africa is according to all reports, not the tamest sort of sport nor do the rifles receive the gentlest of usage, but Cotton says that he never had to adjust his telescope sight through his entire trip, and that it was of the utmost value in seeing game in the jungle where it could not be found over ordinary sights. The writer has seen but two telescopic sights that seemed to be what they should be in their mounting arrangements and optical qualities. They are the Sidle, of American make, and the Goertz of German manufacture. The shoddy mountings furnished with some scopes have done much toward preventing a more general use of this type of rifle sight.

But, regardless of the type of rifle you select or the sights with which you fit it, stick to that particular rifle and learn it thoroughly. It takes months, sometimes years, if you shoot but little, to make friends with a rifle—to get accustomed to it and the feel of it, so that it leaps to your shoulder like a well fitting shotgun and will shoot straight even though it is too dark to see your sights. You should know the trigger pull so you can gauge the pressure necessary to discharge the rifle to the last half-ounce. If you intend using the rifle on game sometime, the better you know the rifle and the better you shoot it on targets or tin cans or cats, the better chance have you for landing the nobler quarry when the time comes. Any old rifleman knows how strange and uncomfortable a new rifle feels if he is accustomed to one of his own and he knows too, that his scores at the target will show the difference. Even a military rifleman, shooting a rifle as like a thousand others of the military type as so many peas could resemble each other, will complain if asked to shoot a strange rifle—and not simply on account of the difference in the sighting.

The man who shoots merely at big game, who keeps his rifle lying idle eleven and a half months in the year, is cheated out of three-fourths of his fun. To the genuine rifle lover, half of the pleasure in hunting is the feel that he is prepared for any game that may show itself, that he and the rifle are old friends and understand each other. The man who hunts merely to kill, who regards his rifle merely as the instrument that will let the life out of the game he may see has missed the best part of the fun.

Make an intelligent selection of your rifle; don't get a cannon for practice at thirty yards on house flies, but whatever your selection, *shoot the rifle*—don't stick it somewhere in a corner for eleven months and then wonder why you miss your hard sought game on the twelfth.

Turn rifle crank instead of game killer and see how much more fun you get out of the game.

[THE END]



# AMERICAN AND FOREIGN RIFLES

By LIEUT. TOWNSEND WHELEN, U.S.A.

**D**URING the last six months the *Outer's Book* and many other sporting magazines, have been filled with discussions for and against foreign rifles, on the bolt *vs.* the lever action, etc. I have read all the articles with the greatest interest, particularly those by Mr. E. C. Crossman, whom I know to be an expert whose opinion is worthy of respect, and also lately an article by Mr. Newton, replying to Mr. Crossman's articles. Mr. Newton is also well known among the experts and has done much original experimenting. That two such noted writers, experimenters, and marksmen should disagree so materially seems remarkable. Without taking up the cudgel on either side of the discussion, I should like to present to our riflemen a few pertinent facts for their consideration. My own experience has been limited to our own make of rifles, both lever action and bolt. My experience with the lever actions has been continuous for the last 20 years, and during the last nine years I have probably fired as many shots from our bolt action rifles as any man living. Although I must plead lack of experience with foreign rifles, I have lately had the favor extended me of a careful examination of all the prominent makes and have been able to form a pretty accurate estimate of their worth. With all this experience I must say I am still as much at sea as ever in regard to which is the best rifle. Personal opinions and tastes enter so much into the matter, that even were it possible to construct a rifle mechanically, ballistically and artistically perfect, I doubt if it would even suit the majority of our riflemen.

I am going to consider the bolt and lever action American rifles and the bolt action foreign rifles in regard to their accuracy, durability, safety, rapidity of fire, finish, balance, etc., and shall pick them to pieces, lock, stock and barrel, presenting the facts in the case as they appear to me.

## BARRELS.

The most important part of a rifle of course is the barrel. Our more modern barrels are bored very much alike. They are bored before rifling to be a perfect cylinder without taper or choke, and are then rifled with uniform depth of grooves for their entire length. Our .30 caliber barrels, for instance, are bored .3000 inch and rifled .004 inch deep, and they thus have a constant land measurement from throat to muzzle of .3000 and a similar groove measurement of .3080 inch. The throat is short, the bullets having a short groove bearing surface, mostly enclosed in the shell, and a long land bearing surface. The barrel is not throated for the land bearing surface, that part of the bullet extending right up into the rifling. We depend upon the land bearing part of the bullet to correctly center it in the barrel and prefer to have the groove

bearing portion short, to reduce the friction. Such barrels give all the accuracy that can be desired. They shoot much more accurately at all ranges than it is possible to aim them with metallic sights and are fully capable of placing all their shots in the regulation bullseye at 1000 yards. Their lasting qualities depend upon the kind and amount of powder used. The .30 caliber Springfield, with pyrocellulose powder, has been fired over 6000 rounds before any decrease in accuracy could be noticed even at 1000 yards. The same rifle loaded with Du Pont 1908 Military Powder has been fired 4500 rounds before deteriorating. The .30-40 Krag and Winchester rifles using W. A. powder have a shorter life, averaging about 1500 rounds before their long range accuracy begins to disappear. Note, however, this carefully for comparison. When our high power barrels begin to go off in their shooting qualities it will be noticed that the hot powder gases have eroded or burnt the barrel just in front of the chamber for from two to five inches. This portion of the bore has become enlarged and roughened, and the lands have almost, if not entirely, disappeared. In outside shape and weight the preferred shape of our best barrels going back even to the day of the Sharp's Old Reliable rifle, have been round, heavy at the breech, and tapering gradually and evenly to the muzzle. Barrels shaped thus have done the best shooting and have been free'st from flip. Some few of our rifles have been put out with very heavy breech tapering a few inches ahead of the chamber to quite a small diameter, which is carried to the muzzle. Such barrels have been found to have excessive flip and to do excellent work only when used with one particular make of very evenly loaded cartridges, a change to another make often requiring an entire resighting of the rifle. We believe that a round barrel expands equally in all parts as it heats up in firing and thus prefer it to the octagon or ribbed barrel, particularly for long range work.

Now let us look at the typical barrel of German make, as seen on the 8 and 9 m-rifles. These barrels are bored, before rifling, with a gradual taper from breech to muzzle. They are then rifled cylindrically, the result being that the grooves are very shallow at the breech and deep at the muzzle. In fact, they look exactly as our .30 caliber barrels do just before they are worn out, being, however, without the roughing at the breech from erosion. They seem to have a little better polish than our rifles, although I have seen some Winchesters which were as smoothly bored as the best of the foreign make I have examined. The foreign bullets have their groove bearing surface extending from the base right up to the point with no land bearing surface at all. The barrels have a long throat to accommodate this bullet and it is supported and



centered accurately by this throat. The lands being shallow at the breech, cut gradually into the bullet. In outside diameter the barrels are very thick at the breech but immediately in front of the chamber, and about half an inch in front of the receiver they taper very suddenly, with quite a bottle neck to quite a small diameter, which size is carried with slight taper to the muzzle. These barrels have a rib on top, very similar to that on the older style of Smith & Wesson revolvers. This rib is matted on its upper surface.

Now for the comparison between the two types. It seems to me that the powder erosion will soon cause the shallow grooves of the foreign barrel to disappear. When this results the bullet will have to jump quite a little distance through a smooth bore before taking the rifling. If one of my .30 caliber American barrels looked like these foreign ones do, I should be about ready to discard it as worn out. Two other facts also tend to make me believe that the foreign barrel will have a short life. First, the very long groove bearing surface of the bullet, which will give increased friction and heat over our bullets of the Hudson-Winchester type; and, second, the fact that the foreign makes of powder usually used in these rifles have very much hotter gases than ours. As to the two ways of centering the bullets in the bore before explosion takes place, one is probably as good as the other. Mr. Walker, of the Remington Arms Co., chambered a few Remington Lee rifles after the foreign method in 1902, using swaged up 30-40 bullets, and these gave satisfactory results at 1000 yards. Mr. Crossman tells us that the rib on the foreign barrel prevents all flip, so that at short range miniature loads require the same elevation as high power loads. The same holds true with several of our own rifles with round, gradually tapered barrels. The matted surface of the upper side of the rib is a great advantage, but we can also obtain American barrels with matted upper surfaces.

It seems to me that the foreign rifles will give the same results regarding accuracy as our very best rifles, but that this accuracy will deteriorate much sooner than with our best rifles. The other details as to the exterior shape, weight and finish of the two are largely a matter of taste. It cannot be denied, however, that all our factories put out many inferior barrels which cannot be compared with the average run of foreign make, either in accuracy or lasting qualities.

#### ACTIONS

The action for a repeating rifle should be safe, absolutely reliable in its functioning, durable and rapid. Regarding the first qualification—safety. I think all actions may be considered safe for the cartridges for which designed. No action is absolutely safe. I personally saw the action of a New Springfield rifle, which I consider the strongest made, completely demolished and the bolt blown back in the shooter's face. The accident, as near as I could determine, was caused by a double charge of powder in the cartridge. The barrel of this rifle was not injured a particle. I have also seen other cases where the barrel suffered and the action stood pat. One case with a .25-35 Winchester Single Shot rifle occurred where the action was blown to bits and the barrel not damaged a particle. The load that did the mischief was the shell full of sharpshooter

powder. This action is about the strongest made by any of our private makers. All of which I think simply goes to show that no action is infallible against fools and the mistakes of the loading machine. Sometimes, however, a manufacturer is tempted, from the standpoint of economy, to adopt a new and more powerful cartridge to an old action, and enough safety limit is not left. I cannot help think that this has been done with the Winchester Model 1895 action in adopting it to the Government Model 1906 cartridge. The action was originally designed to stand a breech pressure of 38,000 pounds, but the new cartridge develop 50,000 lbs. pressure, and a bad case of metal fouling, unknown with the old cartridge, might develop even 75,000 pounds pressure with the new one. Sometimes a little wear well render an action unsafe. I had a few years ago a Winchester Model 1894, .30-30 rifle, which I used a great deal. Toward the end of its life the bolt would often blow back and open on firing, due to the wearing of the friction stud on the rear end of the link. The defect, however, was entirely remedied by a new friction stud and spring.

When it comes to reliability of functioning, I think the bolt actions have the best of it. I have, of course, in my profession unusual facilities for observing of bolt action rifles, having been for the last eight years in the closest touch with thousands of men using these rifles daily. Mr. Newton says he has had both the Krag and Springfield jam when the cut-off was set for magazine fire. I can hardly understand this statement, for I have never seen a jam with the Krag which was not due either to gross ignorance or carelessness. I have fired probably 20,000 rounds from Krag rifles, much of it rapid fire, and under excitement, and never had a jam or trouble of any kind. I have never yet seen a new Springfield rifle jam and do not believe it is possible for it to do so. The foreign Mauser action is identical with the Springfield and what holds good with one rifle must hold with the other also. I have never seen a jam with any of our bolt rifles which could not be rectified in five seconds. The Krag would jam if one cartridge was pushed half way into the barrel and then the bolt deliberately pulled back and another cartridge pushed up against the first. It would also jam sometimes if in filling the magazine the head of one cartridge was placed ahead of the one preceding it. To do either of these acts one had, it might almost be said, to do them intentionally. The clip of the Springfield will occasionally "spill" the cartridges in loading, but this is no fault of the action.

On the other hand, every little while we hear of a lever action jamming through no fault of the user. The only lever action I ever had jam with me (excluding the old 1873 Winchester, now obsolete) was a 25-30 Winchester Model 1892. I have never heard of a case of the Winchester Model 1895 jamming and believe it is impossible for it to do so. Jams with lever action rifles are often very hard to rectify. Sometimes it takes a whole machine shop of tools to get at the trouble.

Regarding the durability of the two actions there is little to choose between the two when black powder cartridges are used. I have a Model 1895 40-72 rifle which has been fired upwards of 20,000 rounds and the action is still as good as new, and I have seen other models after similar wear in the same condition. But all lever actions used with



really high power cartridges seem to get very shaky and worn after seven or eight hundred rounds. It has long been a fact well known to all ordnance boards, that the bolt action is the only one which will stand the blows of thousands of rounds of smokeless cartridges and still remain tight and safe. For durability I do not believe any actions can surpass our Krag and Springfields, particularly the Krags numbered over 400,000 and the Springfields numbered over 250,000. It is not perhaps known that these rifles are being constantly improved. Every weak part and every accident to these rifles has always been reported officially and the Ordnance Department has always welcomed these reports and used them to assist in making every part and piece of the rifles better and stronger. I have a Krag action which has had five barrels fitted to it and worn out, besides an enormous number of reduced loads fired from it, and daily snapping practice for five years, and today it is as good as ever—not a single part has failed in any particular. I know through long association, through the scanning of hundreds of reports, what our own military bolt actions will do, but must plead ignorance regarding the foreign product. If their material is as good as ours they should be just as durable, but I should hate to trust them 500 miles from a gunsmith and 5000 miles from separate parts, and these last not interchangeable, without positive first-hand knowledge on this point.

Regarding rapidity of fire, neither our bolt or lever actions or the foreign Mauser rifles leave anything to be desired. It is perfectly true that lever action rifles having a free recoil of less than 11 foot-pounds can be fired much more rapidly than the bolt action, and also in all calibers they can be fired more rapidly in unaimed fire, all this to the extent of one magazine full. When, however, it comes to the really high power big game cartridges having a recoil of over 11 foot-pounds and used for accurately aimed fire, the recoil so disturbs the equilibrium or balance of the marksman that it takes about a second and a half for an expert rapid fire shot to recover it sufficiently to aim steadily again. During this interval either bolt or lever action can easily be worked, so that it becomes a fact that with the larger high power big game cartridges aimed rapid fire can be executed as fast with one type of action as with the other. It is hardly fair, for instance, to compare the rapidity of fire of a 9 m-m Mauser with a 25-20 Winchester Model 1892, but rather should the former be compared with a .35 caliber Winchester Model 1895 in this respect. If this be done the bolt action will be found just as fast in skilled hands. Also the bolt action can be shot with greater rapidity and accuracy in the prone position than the lever action. I have never fired the Mannlicher action, so cannot state anything as to its rapidity. The Remington-Lee was a very slow action, as the main spring had to be compressed by pushing the bolt directly forward, which was a decided effort and besides pushed the rifle away from the shoulder. The Krag, Springfield and Mauser compress the main-spring by a cam in first opening the action, and it is mechanically so arranged that it is no effort at all. I consider the Krag the fastest bolt action made, and with it I have frequently fired six shots in twelve seconds and gotten six hits on the prone skirmish figure at 200 yards. This figure is considerably

smaller than a deer's body. Using the Springfield rifle in rapid fire at 200 yards, I have often seen men fire all their five shots in from 10 to 12 seconds and have all shots hit the kneeling figure.

Another important feature in a rifle action is the ease with which it can be taken apart for cleaning. It is here that the bolt action is head and shoulders above the lever, and this is the deciding feature which causes me to prefer the bolt action. Suppose you are residing in a cabin in the north-west. You take your rifle out some winter day for a hunt—temperature 20 below zero. If you have previously taken the rifle entirely apart in every detail (time, bolt action 15 seconds; lever action from 2 to 3 hours) and wiped all oil from it, you will have no fault to find with your arm. Towards dark you come home to your warm cabin pretty well tired out. After five minutes indoors your rifle thaws out and condenses a film of moisture on every single part down to the most minute screw and pin. If it's a bolt action you have only a little job. You dismount the rifle, time not more than 15 seconds, wipe each part with a dry rag and then an oily one, time not more than five minutes, put the rifle together again, time 15 seconds; total time not more than 6 minutes. But if it's a lever action you get out your different sized screw drivers, three or four drift pins and a pair of pliers, and get to work. By the time you have gotten the breech action entirely apart, including the bolt and extractor and extractor spring, and taken out the magazine and magazine spring from one to three hours have elapsed, depending upon how expert you are at the job. The assembling will take just as much time, so that the job will take you from two to six hours at a time of day when you are very tired. If you neglect to do this your rifle rusts in every part, becomes stiff and hard to operate, continually jams at critical times, and a couple of repetitions of this lack of treatment renders it absolutely useless.

Similar occasions occur in other localities and climates when it is absolutely necessary to entirely dismount the action for cleaning. A day behind a pack train or a sand storm on the Arizona desert will make it necessary. A day's hunt in the tropics, the fall of the rifle into a stream or a very rainy day anywhere will also make it desirable.

I started out to give the pros and cons on either side of the argument as they appeared to me and it is only fair that I should state one weak point in the bolt action rifle. Suppose you are hunting on a rainy or sleeting day and it suddenly turns colder or freezes. The water has leaked in around your bolt and then frozen. The whole action becomes frozen up fast and you can't open it or operate it in any way. The only thing to do is to stop, build a small fire, thaw the rifle out, dismount it, and wipe it off. The weather remaining below the freezing, this will not occur again. This, it seems to me, is the only weak point in the bolt action. It only occurs when the rifle gets wet through and the thermometer then drops below the freezing point. The lever action will not admit enough water to cause this trouble if kept well oiled and guarded.

When one hunts deer and similar game in the thick woods of the north-east, when rapidity of fire is greatly desirable, I believe he will secure the best results from a medium power lever action rifle like the Winchester Models 1886 and 1894, or the Savage. So too the sportsman whose hunting is



confined to a month or two in the early fall will have no fault to find with our lever actions of standard make. But when the hunter or explorer separates himself for many months from civilization, when he hunts the grizzly and giant moose, when his shots are as often above 200 yards as under 100, and particularly if his hunting ground is the frozen north, I think the bolt action is much more apt to carry him through without word of complaint than any lever action. And I believe he would be well, until we know more about these foreign rifles, to adopt a Krag or Springfield with sporting finish and sights, for their durability is unquestionable. My own favorite rifle for wilderness hunting is a Krag carbine with Lyman sights. This type of arm is splendidly illustrated in Mr. Jenkins' admirable article in the July number of the *Outer's Book*. Mr. Jenkins states that he obtained most of his ideas on remodeling this arm from a previous article by myself. By some lucky chance he has exactly duplicated my own rifle, except that on mine I have retained the military butt, and have substituted a hand guard without rear sight recess for the one which came on the rifle. This rifle shoots accurately enough with high power ammunition to enable one to be sure of big game up to 500 yards provided he has correctly estimated the distance and knows his sight elevations for the various ranges. It will also shoot the ideal bullet No. 308241 accurately enough to be sure of hitting the head of a grouse or squirrel up to 75 yards. I think it would be very hard to find a rifle which would excel it in all points in a real wilderness. However, I must admit that were I going into Maine or New Brunswick or Northern Wisconsin after deer, caribou or moose, I believe I should choose a Winchester .33 caliber Model 1886, as two or three shots at a disappearing animal in the thick woods can be gotten off quicker from it than from any bolt action.

#### STOCKS

A stock suitable for a hunting rifle should fit the owner perfectly so that when the rifle is thrown

naturally to the shoulder, the sights come exactly into line on the object aimed at. Of course the factory standard stocks will only be correct for a small proportion of individuals. After a good barrel it will pay better to invest extra money in a well fitting, made to order stock, than in any other way. A stock should also be checkered at the grip, and the fore arm should be checkered otherwise hands wet with rain or perspiration are apt to slip at the critical moment and give one a wild shot. Also it is much easier when one wears gloves to obtain a good hold on a checkered stock and forearm than on smooth ones.

The stock on a foreign arm is no more liable to fit one correctly than is the stock on our own standard rifles. These foreign stocks are thin and weak at the grip, and liable to break at this part in case of a fall. Our own sporting rifle stocks are heavier here and moreover are reinforced by heavy steel tangs. Our military models have thick, heavy grips and in service seldom break. In reading English works on big game hunting one is continually coming across cases of rifle stocks breaking at the grip.

I am under the belief that there are a great number of sportsmen in this country who would like to see placed on the market a reliable, accurate and durable rifle of superior finish and workmanship, and that they would stand ready to pay almost any price for it. I believe the most popular action for such a rifle would be one operated by a lever, similar to the Winchester Model 1886, but with a now protruding box magazine, clip loading, and capable of being dismounted in every part without tools. It and its ammunition should be accurate enough so as to give a mean vertical dispersion at 1000 yards of not over 7 inches and this accuracy should remain for over 5000 rounds. I think that such a rifle made by American machinery and slightly finished by hand as to trigger pull and smooth working of bolt could easily be made to retail at \$50.00 and think it would fill a long-felt want among the true lovers of a fine rifle.

## HUNTING ARMS OF THE FUTURE

By "ALMO"

WITH great interest on a hot July day in New Mexico, I read that interesting article on the conversion of the army musket to a sporting arm. Before undertaking such a job, one little look into it should be done. A military arm is the last resort a sportsman should use. Its cartridge is constructed to wound; a sporting rifle should be constructed to kill and with as little suffering to the wild beast as possible. A few years ago a small bore craze spread over the world, but it is ended. The leading rifle makers are making larger bores—England is showing 577;

Belgium 10 m-m and our makers are following. The new game laws of New Mexico prohibits the use of these long range military arms because too many wounded black-tail deer and many stock are found crippled. Stalking large game is become a lost art. A practical hunting rifle for large game would be unsalable in our market until the small bore craze is ended, and we again learn the art of stalking, and use a hunting rifle. For target shooting and for sale to the masses of the people our American rifles are leading the world. They are marvels of work at the price they are sold at. The largest



bores using high velocity cartridges, are just right for American game. These are not called for by buyers, but .25 and .30 caliber sell readily. Target practice uses the most cartridges, so it's well to let the target rifle lead. Big game hunters, as a rule, can use most any gun, provided it is free from any safety device, when trigger is pulled. Automatic pistols are in great demand and target cranks want a .22. It would be a good investment for the cartridge men and would encourage target practice, but for automatic pistols as a weapon of defence, please excuse me. I have been held up six times and every time I found that my .45 colts weight of metal used as a club saved me when applied with a large amount of nerve gathered on Texas ranches. Automatics have too many safeties. I have heard of one being made to act as a double action. This would be handy, as the trigger could be pulled in

coat pocket. The makers are turning out over one thousand per day and are nearly two years behind orders. For target use, Colts target revolvers are all one can wish. By continued use the cylinder is jarred loose in the frame, but an expert gunsmith can bring the frame together in his vice. Stopping the leakage of powder gas, and making the revolvers equal to new. In shot guns, lately, I have seen several lady hunters using American .20 gauge guns. I shot for trial an Ithaca .20 gauge, "being for several years a 20 bore crank." I found that Uncle Bob Edwards of the Ithaca Gun Co. has the boring of 20's down as fine, if not finer, than the high priced makers of Europe. The shooting season is drawing near. Fishing has been good. Deer and turkey are reported plentiful. Armed with a dollar-and-half hunting license, one can kill his limit in New Mexico every day.

## THE BOLT ACTION AGAIN

By R. J. KAUFMAN

I HAVE read Mr. Crossman's vigorous attack upon the lever action rifles and I consider this so unwarranted that I cannot refrain from dipping my oar into the argument. Mr. Newton, in the July Outer's, has handled the theoretical side of the question well; I wish to say a few words about the practical part. I have used the Model 1895 Winchester continuously for the past five years,—first the .30-40 Sporting Model, next the .30 Rimless Sporting Model, and last, but not least, the .30 Rimless N. R. A. musket, which I have now, and which, for practical use, I would not swap for all the Mausers, Mannlichers, Krag-Jorgensens, etc., that ever came out of Germany or Denmark. Now as to a little comparison. I presume Mr. Crossman will not object if I take, for example in speaking of the bolt action guns, the New Springfield, which is the latest and universally recognized as the best of all the bolt actions. Mr. Crossman speaks of the cute little tricks of the lever action rifles, but is he aware that the New Springfield has the cute little trick of catching its magazine follower against the rear wall of the magazine, thereby preventing the cartridges being presented to the bolt in order to be carried into the barrel? This would be sure to bring forth loud applause if a Filipino, with a four-foot cheese knife, was "sashaying" with blood in his eye in the direction of the user. Also, the New Springfield is supposed to throw out its empty clips, but as a matter of fact, only about three or four out of the five will do it. The other one or two will not let the bolt forward until the clip is taken out by hand. Again many of these rifles will not load properly. I have known guns, which, with every clip that was loaded, would allow one or two of the cartridges to jump forward out of the middle of the clip as the shells were being

pushed down into the magazine. Sometimes a shell would lay too far forward, partly in the magazine and partly in the barrel; then there would be as pretty a jam as one could ask for. Furthermore, many of these weapons work hard or cloggy, rough places on the receiver preventing smooth working of the bolt. Of course, I don't suppose that this is the fault of the superfine design of the weapons, but all the same, we have to use them as they are handed to us by Uncle Samuel, not as they are made by the Utopia Firearms Co. Now as to the shooting. In the military company of which I am a member, we have one gun which shoots at 200 yards with the sights set at 200, at 300 yards with the sights set at 100, and at 500 yards with the sights point-blank; another which shoots at 200, 300, and 500 yards with the sights set at 550 for all three distances; another, at about every second shot fired, will make simply a hissing noise and drop the bullet a few yards in front of the gun; another which shoots at 200, 300 and 500 yards with sights set at zero and at 600 yards with one point right wind. One of these weapons would be a fine article to do long range shooting with or stack up against a wounded grizzly or moose with, wouldn't it? W. M. Pugh, an ex-ordnance sergeant, of Baltimore, Md., to whom I wrote in regard to these weapons, says:—"Now as to those rifles you spoke of and their erratic behavior, with sight changes; I remark that I am not any more surprised at these or other similar occurrences. I think I am within the truth when I say that I have had to intimately deal with some 1200 military pieces and the idiosyncrasies of these weapons under varying conditions of practical use, taught me to expect most anything of them." In contrast to this, I have never seen a Winchester or a Reming-



ton which did not do good, consistent, accurate shooting up to the limit of its accurate range. Mr. Crossman says that having the receiver closed at the rear is the only guarantee of safety. Then how about the bolt actions? They are not closed at the rear. Now, as to the bolt being locked three inches from the head of the shell, when my Winchester (or any other) is shut the bolt is as tight and as solid as if it "grew there." The bolt of any Springfield can be wobbled laterally about one-thirty-second of an inch and about one-tenth inch lengthwise when the bolt is shut. Supposing a primer should split or the powder get too "rambunctious" and welt the head of the shell, as sometimes happens, which would hold the gas in place the best? And it is just as easy to believe there are flaws in the locking bolts of a new Springfield as in those of a Winchester. Mr. Crossman seems to forget that there are just as liable to be flaws in one as in the other, also that proof loads, of far greater pressure than any rifle is intended to shoot, are fired in all rifles, for the express purpose of bringing out such flaws. I have seen a .38-55 Winchester carbine, fired with an overload of smokeless powder, which burst the barrel at the breech so it was spread out nearly flat, but the action worked as freely as the day the gun was made. I have known of a fine target .45-70 Winchester fired with an overloaded shell, which burst with such violence as to throw a piece of the barrel 150 feet, but the action is still in the ring. As to rapidity of manipulation, I have handled both bolt and lever action guns, and I consider the lever action twice as quick as the other, and I have never yet met a shooter, even the rankest bolt-action crank, who would not admit it. Concerning the cleaning part, the bolt action gun is certainly the easier to clean properly, but the difference is not of such importance as it may seem. If one uses care, no rifle need be ruined by cleaning. I use a throng and can clean my Winchester in that manner much easier than I can clean my Springfield with a rod, on account of its extremely smooth finish, in which point it is way ahead of the Springfield. Ex-President Roosevelt, who is recognized as some-

thing of an authority on firearms, has chosen Winchester and Remingtons to take with him into Africa and from the reports that are coming to us, they certainly seem to be making good, as they always do. It is a significant fact, that explorers, in the equatorial and polar regions, gold-seekers, plainsmen, adventurers and others who require a weapon that is absolutely reliable and can be depended on in every emergency, almost invariably choose the Winchester. The American sportsmen and our western pioneers, who certainly are intelligent enough to know a good gun when they see one, have never taken kindly to the bolt action. The Hotchkiss never became popular outside of military circles and has long since died a natural death. The Remington-Lee, a weapon of splendid balance, beautiful design, and excellent shooting qualities, points found in few bolt action guns, did not become popular enough to warrant the continuation of its manufacture and is no longer listed by its former makers. The Lee Straight Pull and Chaffee-Reece have gone the same ignominious route. What is the cause of this if it is not the survival of the fittest? After careful study and much use of the two styles of weapons, I would sum the matter up thusly: The bolt action is superior to the lever action in ease of cleaning, dismounting, and assembling. In speed of manipulation, balance, and handling qualities, the lever is much the superior. Either is strong and safe, the lever, if anything, being a little the better. In quality of barrels, which is the all-important point, the lever actions are, in general, far superior to the others.

In concluding, I wish to add my voice to those which are raised in demand of a .22 caliber automatic pistol. We need it badly and I think there would be a great demand for such a weapon. However, let us have it built, not for the .22 automatic cartridge, but for the good old reliable .22 long rifle, which is more powerful and costs only about half as much as the automatic cartridge. In a future number of *Outer's* I intend to give some hints on the cleaning and care of firearms, if the editor deems my article worthy of printing.

## THE COLT EXHIBITION

THE eyes of the shooting world are now centered on the big tournament which started at Camp Perry, Ohio, on August 9th and will continue until September 4th. The country's most expert rifle and revolver shooters are contesting for the many prizes offered for skill in target shooting, and with improved arms and ammunition this year's scores will be record breakers. Among the trade exhibits that of the Colt's Patent Fire Arms Manufacturing Co., of Hartford, Conn., is unique and interesting. Not only is a full line of their famous revolvers and automatic pistols shown,

ranging from the little vest pocket caliber .25 to the heavy six shooter, but the "Evolution of the Army Revolver" is shown by samples of the various models adopted by the United States government, including the old "powder and ball," the forty-five introduced into the West by the cavalry troops and made famous by the cowboys, and ending with the new improved type which the company is furnishing for use in the Philippines and Cuba. An opportunity is also afforded to examine the latest type of automatic rifle recently adopted by the government, known as the Benet-Mercie, which will be manufactured by the company for the army.



# THE DROP OF THE BULLET

By CHARLES NEWTON

THE article on "Selecting that Rifle," by Edward Crossman, in Outer's Book for August, contains so much that is valuable and so many points which are unknown and consequently surprising to the novice in ballistics that I feel like emphasizing some of the points made, particularly as to correcting the popular impression that there exist rifles which "shoot flat" for some distance.

Mr. Crossman gives the actual figures showing the drop of a bullet fired horizontally from a rifle held four feet above the earth, and they are certainly surprising to the novice and inasmuch as I am a novice they surprised me.

Mr. Crossman states (page 163) that "a bullet therefore, traveling at the *uniform* speed of 2000 feet per second away from a rifle held perfectly horizontal, four feet from the ground, would strike the ground one-quarter second later, or 500 feet away." He makes no mention of the effect of the flip or jump of the barrel, therefore I assume that he considers the bullet to be projected in a perfectly horizontal line from the muzzle of the rifle until forced into a curve by the action of gravity upon it. He further states in part the law of falling bodies, showing the rate of fall to be 16 feet the first second, 3 x 16 or 48 feet the second second, 5 x 16 or 80 feet the third second, 7 x 16 or 112 feet the fourth second, 9 x 16 or 144 feet the fifth second and so on. However, this law applies just as fully during the first second as at any later time, and since the bullet falls 16 feet the first second and starts from rest, or zero, its average velocity during this second is 16 feet and its velocity at the end of the first second is 32 feet per second, consequently it does not fall as far during the first part of that second as during the latter part, its velocity constantly increasing during its fall.

To ascertain how far it fell during the first quarter second, which Mr. Crossman says was four feet, we will apply the law of falling bodies as follows:

Let X equal the distance which the bullet falls during the first quarter second. It will then fall 3 X during the second quarter, 5 X during the third quarter and 7 X during the fourth quarter.  $3X + X + 5X + 7X$  equals 16 X the whole distance traversed during the second. 16 X equals 16 feet, therefore X equals one foot. The distance which the bullet falls during the first quarter second, hence my surprise at his figures.

Of course, these figures are based upon the bullet maintaining a *uniform* velocity, which it does not, but in stating the proposition Mr. Crossman expressly assumes that the forward velocity of the bullet is *uniform*, consequently the difference between Mr. Crossman's figures and mine show the exact difference between our respective understandings of the subject, unless, possibly Mr. Crossman was shooting uphill. However,

Mr. Crossman states in the same article, (page 164) that "air resistance is *negligible* at the short ranges up to 300 yards."

The United States Government states in the Manuals of Instructions issued with the different arms used by it the remaining velocity of the bullets from the different cartridges at the different ranges as follows:

| Cartridge | Model | Muzzle. | Velocity at |      |      |      |      |
|-----------|-------|---------|-------------|------|------|------|------|
|           |       |         | 100         | 200  | 300  | 400  | 500  |
|           |       |         | Yds.        | Yds. | Yds. | Yds. | Yds. |
| Krag      | 2000  |         | 1783        | 1590 | 1418 | 1265 | 1138 |
| 1903      | 2300  |         | 2092        | 1898 | 1718 | 1554 | 1406 |
| 1904      | 2200  |         | 1999        | 1812 | 1634 | 1482 | 1342 |
| 1906      | 2700  |         | 2465        | 2244 | 2038 | 1846 | 1668 |

Thus we see that not only is the air resistance not "negligible" at the short distances but is in fact greater at shorter than at longer ranges, and grows steadily less as the range increases.

As to loading powerful smokeless powder rifles with very light charges, it cost the writer a fine barrel to learn that the decrease in power may be carried too far for the safety of the barrel.

We all know that the fumes and the residue developed by exploding a smokeless powder primer are intensely acrid in their nature, but when used with a loaded cartridge these elements become blended with the gases of the powder and are carried safely out, but where the charge of powder is so small as not to completely carry them out, unless the rifle is very carefully and persistently cleaned it is likely to rust.

The writer has a high power .22 caliber rifle developing 2550 feet seconds velocity with 19 grains Lightning powder and a 63 grain bullet. He wanted to get a charge for crows which would be as nearly noiseless as possible, so worked up one of four grains *bulk* of Infalible powder with a 48 grain bullet and used with a Maxim silencer. The noise was very slight and velocity and accuracy good, but the barrel, which, when used with the full charge cleaned very easily, was very difficult to clean, and when put away after cleaning was found in so badly rusted a condition a week later as to be beyond saving. Since which I have gone very slowly in using very light charges of powder with smokeless primers.

I also noted with much interest the comments in Mr. J. E. Taylor's article in the same issue upon my comparison of the strength of the New Springfield and the Model 1886 Winchester, and will say by way of explanation that the reason I dwelt particularly upon the locking bolts of the latter rifle was the fact that Mr. Crossman, to whose article my letter was in answer, had pointed out these slips of steel as being the particular source of weakness of this action, although personally I consider them its strongest point, but I will compare the two actions with regard to the point indicated



by Mr. Taylor, viz: the sides of the receiver where it is weakened by the cut for the locking bolts.

As stated in my former article, the amount of metal to be sheared off in the New Springfield in case the bolt is to be forced back amounted to 2-7 square inch of sheared surface, exclusive of the decidedly frail safety shoulder support, but I did not point out that from this should be deducted the amount of slot about  $\frac{1}{8}$  inch wide cut lengthwise through one of these lugs, thus removing this amount of metal, but we will not bother with this and will consider the New Springfield as presenting 2-7 square inch of metal to hold the bolt in place.

The Model 1886 Winchester receiver measures 5-32 inch in thickness opposite the locking bolt cut by  $2\frac{1}{4}$  inches in depth, but as the receiver is beveled on the corners we will call it two inches. Inasmuch as the likelihood of the action giving way is not a problem of interest from an *economic* standpoint, the possibility being so remote, but solely from the standpoint of *personal safety of the shooter*, it appears that before the shooter can

receive injury from the bolt flying back both sides of the receiver must be broken away their full depth, since if either be left intact it will hold the bolt in place and protect the shooter. Therefore we find this receiver presenting 5-32 x 2 x 2 or  $\frac{5}{8}$  square inch of metal on the cross section through locking bolts slots which leaves it with nearly double the metal of the New Springfield.

Therefore, while Mr. Taylor's point as to the locking lugs not being the weakest part of the receiver is well taken, still at this point the Winchester shows up with nearly double the metal to resist the strain of the explosion found in the New Springfield.

As to Mr. Taylor's estimates of the cost of manufacturing rifles I shall submit this to the Winchester company for their guidance, but as to his logic by which he demonstrates that the metal used in the Winchester rifle is inferior to that used in the New Springfield, this I expect to retain as I am a lawyer by profession and may at some time be badly in need of an argument when it may come in handy.

## ANSWERS TO CORRESPONDENTS

### LOADS FOR THE SAVAGE

EDITOR GUN DEPARTMENT: In the last number "Sandy asks about loads for the .32-40 Savage, and as this is my favorite rifle, I will tell of a few loads I have found satisfactory. I believe, however, that "Sandy" will find the greatest pleasure in experimenting to determine what loads best suit his particular rifle, and would recommend him to get the "Ideal Hand Book," which is cram full of useful information, and is of the greatest assistance in selecting loads, bullets, tools, etc.

Load No. 1.—Ideal bullet No. 317204, 130 grains, not sized, and a 12 grain bulk measure of "Sharp-shooter" powder. This is a fine squirrel load, as this bullet has a round point, not blunt like most 32-40 bullets. This bullet is not listed in the last Ideal Hand Book, but they may be able to furnish it, or if not, one of their other sharp pointed bullets of about the same weight ought to be all right. This load shoots with the same sighting at 50 yards and under as load No. 2 which is one of the reasons I like it.

Load No. 2.—Ideal bullet No. 319295, 165 grains, cast about 5 parts antimony, 10 parts tin and 85 parts lead, with copper gas check on, and a 36 grain bulk measure of "Lightning" powder. This is just about as powerful as the factory high power cartridge, judging from the sights, which take the same setting for 100 and 200 yards for both cartridges. This is a fine load for deer and black bear, also bob cats, which are the only animals I ever tried it on. Have also used the same amount of Walsrode military powder with above

bullet, and it is so nearly the same as Lightning that I have no choice, except that Lightning is easier to obtain.

Load No. 3.—Same bullet as No. 2, except cast of about 5 parts tin and 95 parts lead and no gas check, and 40 grain bulk measure of "Kings" Semi-Smokeless F. F. G. This is a very accurate load, although I believe C. G. powder might be better, but not so speedy. I am not much at the target, and this load will shoot better than I can hold, and is the one I use when I get a chance to practice, as it is very cheap.

In regard to tools, I use the Savage reloading tool, Ideal Shell Resizer, and molds, and ordinary bulk charge cups. The Savage tool is made to resize the shell at the same time bullet is seated, but I do not like this part of it, and have put a set screw on the tool to prevent the lever closing all the way, which prevents the shell being forced all the way into the die, and I resize my shells every time in the Ideal resizer, which is much better. Another point, if the Ideal reloading tool is used, a separate bullet seater will be required for a sharp pointed bullet, as the regular seater will blunt the point, but in the Savage tool, I overcome this by removing the seating screw and placing a pointed bullet in the hole and then pouring a little bullet metal on top. This makes a mould of the point, which, when placed ahead of the seating screw, will prevent flattening the bullet points. This mould can be removed when seating flat point bullets and replaced at will. Almost anything will do for lubricant on the bullets. One mixture which does not crack nor melt off in summer, is



one part beeswax, one part tallow and one part vaseline, all melted together and stirred while cooling. My way of applying this is to stand about 100 bullets point up in a pie plate and pour the hot grease to the right depth. When cool, cut bullets out by pressing over each one a shell with head cut off, allowing them to force the one in the shell out of the open end. Then heat the pan and return excess grease to the original can. I hope some of this may be of interest to "Sandy," but as I said at first, the principal pleasure is to experiment until you find what loads and processes you like.

Yours truly,

J. E. TAYLOR.

### THE REMODELED Krag

EDITOR GUN DEPARTMENT: As usual I have taken the July Number from the newsstand and have become considerably interested in the converted Krag. The question arises, why can not these guns be put on the market for sale to the public? The New Springfield rifle will no doubt take the place

of all the Krags and old Springfield guns, consequently the government will probably sell out the latter. Now, in place of waiting a few years and selling these guns for a little or nothing I don't see why some one who has the financial means could not get them from the government and transform them into the sporting model which you show the photographs of. I have generally noticed that when some foreign country has adopted a new rifle the old guns are sold out for from about three to five dollars. If this is the case with the Krag-Jorgensen it will pay some one to remodel these guns and I feel satisfied that they would sell for a reasonable price, I would like to hear from others on the subject. Yours truly, C. A. PATTISON.

The reason why the Krag and New Springfield rifles cannot be purchased in quantities is that the government will sell only to the National Rifle Association and affiliated organizations. Reasonable restrictions are necessary to prevent the National Arm from passing in quantities into the hands of undesirable parties.—R. A. K.

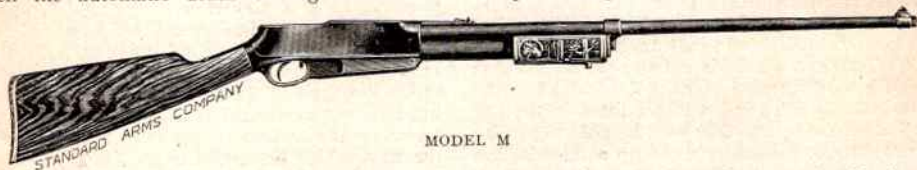
## THE NEW STANDARD ARMS CO.

That Wilmington will revolutionize the manufacture of firearms, is the firm belief of those who have had an opportunity to learn of the output of the Standard Arms Company. The plant, which is one of the most complete in the country, is now in operation, but the output has not reached the initial stage.

The plant has a capacity of almost one hundred guns a day. Starting from blocks of wood and steel through the various processes, down the long rooms of busy machines, the piece is finished—lock, stock and barrel—when it reaches the end of the room, where the tests are made through a tube, three hundred feet long.

In addition to sporting rifles of many calibers, the manufacture of a military rifle is anticipated. When the automatic death dealing machine is

rifles and test them in firing action. He found a large new brick building, with saw-tooth roof, giving excellent light over the entire area, fifteen acres, for expansion, and railway siding. He saw an ideal power plant in which electricity is generated for power and light and exhaust steam is utilized for heat; a fire pump and automatic sprinklers; numerous twenty horse-power electric motors, conveniently distributed throughout the plant for sectional power, and elevated overhead for safety, a blacksmith shop, and furnaces for case-hardening, annealing, tempering, etc.; a machine shop, fully equipped for making special tools, jigs, and fixtures, and for keeping them in good operating condition; long rows of the best up-to-date machinery, each equipped with its special appliances for performing a distinct operation in the manu-



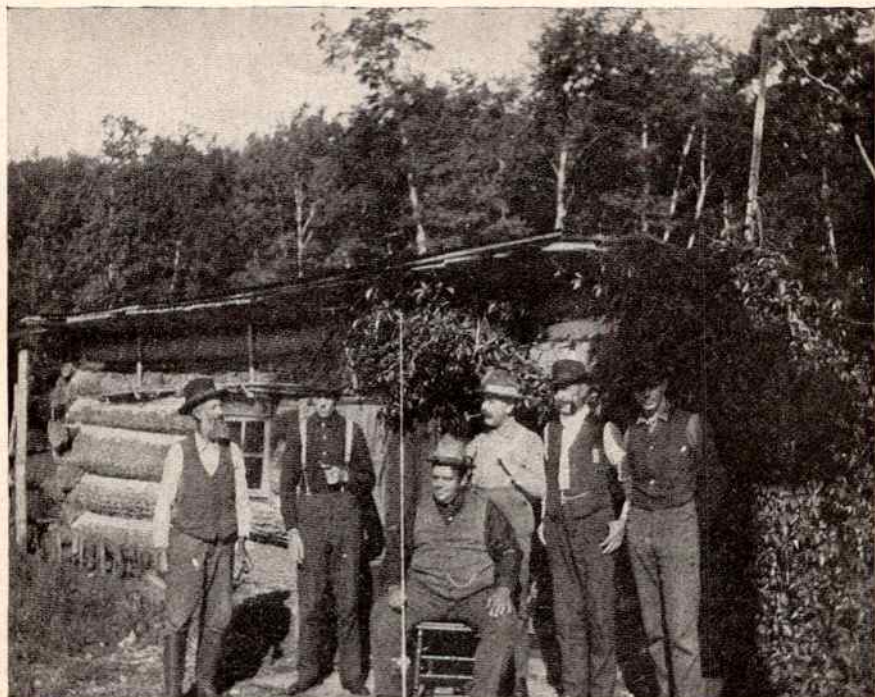
placed upon the market, it will prove one of the greatest arguments for the world's peace that has yet been advanced. It would mean the placing of a rapid-fire gun in the fullest sense of the word in the hand of every soldier, capable of discharging six shots in a second.

It has been known for several months that the Standard Arms Company, including some of Wilmington's best business men, has been equipping a plant in the southern part of the city for the manufacture of automatic rifles under the Smith-Condit patents. The company has had nothing to sell, and has not desired publicity, hence but few know what has been accomplished and what is proposed.

A representative of the Morning News inspected the entire plant, to examine the mechanism of the

facture of rifles; an outside house for bluing the steel parts; a tool room and a store room; bins for drying walnut for gun stocks; a stocking department for turning the stocks, and rooms for polishing and varnishing; an assembling department, where all the component parts meet and are assembled in to the completed rifle; then the Proof House adjoining with its steel tube, 300 feet long and 6 feet in diameter, and terminating in a bomb-proof, in which velocity and accuracy are tested and recorded, and from which the rifle goes to the shipping room; an experimental and developing department, equipped with machinery for that class of work; a large suite of offices, well furnished for business purposes.—*Wilmington, (Del.), News.*





A FISHING PARTY AT COMSTOCK LAKE



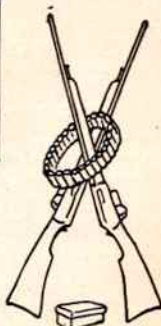
AFTER DUCKS IN COLORADO





# GUNS AND AMMUNITION

EDITED BY ROBERT A. KANE



This department is intended to be a place for the exchange and discussion of views on any subject pertaining to arms and ammunition, from which no one with an idea to advance shall be barred. The only conditions are that the opinion must not be manifestly absurd, that it be expressed in courteous language and that no personalities be indulged in. Each opinion is printed for what it is worth and its publication does not commit the editor to the view expressed. The widest range will be permitted and our readers are invited to make free use of these pages, but it is important to remember that *under no circumstances will personalities ever be permitted.*

## THE COMPOSITE RIFLE

### MERGING OF TYPES

SOME one has appropriately compared war to an organized hunt on a grand scale.

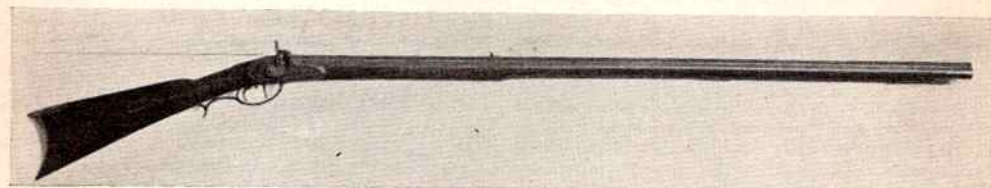
Accepting this view, unprejudiced by a shortened prospective, it would seem that the statement, cruel and inhuman as it may appear, is fully warranted by facts. Assuming that the essential conditions of the hunt are also present in war, it is but natural and logical to ask, why there should be any material difference between the military and the hunting rifle. In studying and comparing the really essential requirements of each type of arm, we find them identical. None of the features which combined or singly serve to produce a perfect arm of either type, will be found out of place on the other. In fact a sporting arm may be and often is vastly improved by the addition of some of those features which have hitherto been found only on the military types. I believe that a retrospective survey of rifle building in America for the past forty years will convince most of us that there has been a gradual tendency toward a merging of distinctive types, until some of the once celebrated rifles of history have forever lost their identity. Styles in rifles do not change with the season, like women's bonnets, or without apparent cause. There is always some clearly defined reason for every radical change of type or caliber. The eager haste of European countries to perfect the military rifle was the direct cause of the high power small bore cartridge being welcomed in the domain of the hunter, and the same reasons which led to its adoption by the military group, were urged to introduce it among users of the sporting rifle. The more attractive and convincing of these reasons were: enormous striking energy, great velocity with consequent low trajectory and greater danger zone, rendering fine sight adjustments unnecessary at practical hunting distances; marvelous range and penetration, reduced recoil and the advantage of being able to carry double the amount of ammu-

nition. To these undeniable advantages might be added the non-fouling qualities of the new smokeless small bore cartridges and the possibilities of building hunting arms of much less weight, and greatly reduced proportions. *A much needed improvement.* Up to the time of the adoption of the high power military rifle in America, the types of arms and the cartridges adapted to them as used by the different groups of riflemen, were more distinctive than at any other period in their history. To mention a cartridge in the vernacular of the craft in the old days, was to convey definite information in regard to the type of arm for which it was made, and the nature of the work for which it was intended; thus we knew that when some one referred to a 45-120-550 the arm was a Sharp's long range target rifle. If a 44-100-520, it was a Remington target model with a 34-inch barrel and a rolling breech block. There were shooting giants in those days and to the influence of their superb marksmanship and intelligent methods can be traced the consistent victories of more recent years. It was not without deep regret that we have watched the passing of the long range civilian rifleman, and the merging of his peerless weapon into the modern long range military rifle. With the coming of the latter the match rifle disappeared perhaps forever. More than any other arm it was the product of the combined genius and experience of genuine shooting men, not mere theorists. The weight of the match rifle was limited to ten pounds, which, compared to the arms of that period, was a fair average, and kept the special arm well within the limits of practical requirements for either the military or the hunting field. Unlike our Schuetzen-brethren, with their cumbersome overweight weapons, this sensible weight limit enabled the expert target shot to make use of his acquired skill under almost any conditions. His shooting position at short range was



strictly off-hand, the natural and easy position of the hunter, and although the lighter caliber mid-range rifle was sometimes used, many of the best shots used their long range rifles at all ranges. I have frequently encountered the match rifle on the game trail, with but a change of sights, thus proving *that special arms may also be practical arms.* The distinguishing features of the American match rifle

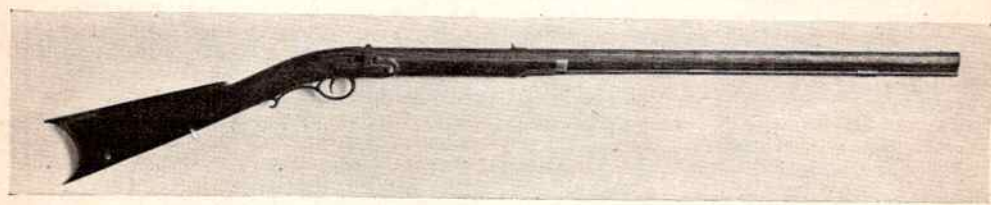
here given were about the average for most special match rifles as there could be but little deviation from an established standard, while the weight limit of ten pounds was maintained. In the interesting period during which long range rifle firing was developed in the United States, the widest latitude was permitted the individual, under the rules, to work out and develop promising theories



A type of the American match rifle, a Peabody Martini with an American barrel. Contemporary with this arm were the Sharp's, the Remington and the Ballard, all much alike in general outline, varying only in mechanical detail. The group of men who were instrumental in developing the match rifle, and who so ably demonstrated its possibilities also discovered the limitations of the black powder cartridge. This may account in part for the loss of interest in the match rifle just prior to the coming of the Krag.

were its absurd simplicity, racy length over-all, slender but strong grip, finely modeled shot gun butt, long exquisitely tapered barrel, a globe front sight with windgauge, and a tall Veonier rear sight, mysteriously suggestive of scientific marksmanship. The actions most favored were the Sharps or Sharps-Borchard, the Remington, the Ballard, the Peabody Martini with an American barrel, or various combinations of the above named actions and barrels. All of the actions here named were for single shot rifles. I cannot remember of ever having seen a repeating or magazine arm used as a match or long-range rifle. The Sharps-Borchard and the Peabody-Martini were hammerless mechanisms, and to my mind were the neatest and most serviceable of all the excellent actions then in use. My own rifle was a Peabody-Martini action to which was

of his own. If successful, the knowledge thus acquired became the common property of the craft; manufacturers readily responded to reasonable requests of acknowledged experts, for changes and improvements with the result that while possibly differing in minor details, the match rifle in America became a fixed standard of excellence recognized everywhere for beauty, balance, durability and performance. Some of the best features of the latest military rifles owe their existence to the genius and painstaking labor of that little group of enthusiasts who did so much to perfect the long range rifle. Instead of the old clumsy, club-like musket butt of colonial days we now have at least a start in the direction of a sensible shapely butt stock which in time will be improved in accordance with the ideas of up-to-date gun lovers, who would



A beautiful specimen of the woods hunter's rifle of that period following the general adoption of the percussion lock. It has a 30-inch full octagon barrel, slightly tapered from breech to muzzle. The stock and fore end are of rosewood and beautifully modeled. It has a plain single trigger and a side hammer, the spur of which is flush with the top of the barrel, so that there is not a single projecting point anywhere on the weapon. The front sight is a solid silver bead so low that it looks like a pellet of No. 10 shot laid on the upper square of the barrel. The rear sight is a nearly flat bar with an extremely fine notch in the center. The rear sight is fully 16 inches from the eye when in shooting position; the sights are 22 inches distant from each other. I have never looked through any combination of open sights that appear so clearly defined to the eye. The trigger guard of old brass extending back in dainty beauty lines supplies a tasteful and handy pistol grip. In studying these now obsolete weapons of our fathers one cannot help thinking that our present day armors in their haste to turn out arms, are losing sight of much that was learned in the school of experience and which might with profit be perpetuated on our newer and more powerful modern arms

fitted a thirty-two-inch barrel, made by the Providence Tool Co., of Rhode Island. It was chambered for the 44-100 bottle necked shell made by the U. M. C. Co., and distinguished from others of its kind by the name "What Cheer." The rifling was identical with the Colt system, and the pitch was one turn in twenty inches, uniform throughout the length of the barrel. The stock was fourteen inches long with straight grip, shot-gun butt, with a drop of two inches at the heel. The dimensions

combine beauty with strength. The trigger-pull of the army rifle has been reduced from the rooky-proof six pound pull of the old long-tom to the three-pound standard established by rational, practical men, unhampered by hide-bound traditions. The barrel has been shortened to meet the requirements of modern explosives and the varying needs of the several branches of military service. It is extremely doubtful if a majority of the best civil and military riflemen in America would en-



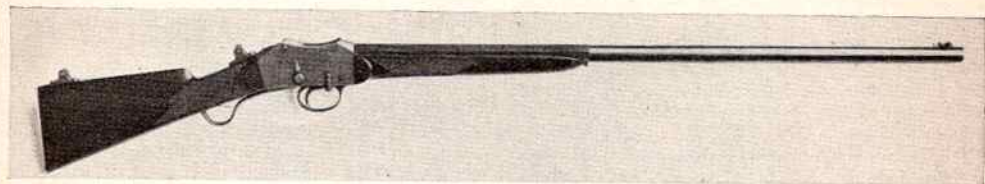
dorse the length of barrel as adopted for the New Springfield by the ordnance department. To increase its length from 24 to 28 inches would give slightly improved ballistic value, a longer sighting plane and an arm less sensitive to sight adjustments. One of the reasons for shortening the barrel to carbine dimensions, was for the convenience of the mounted branch of the service. Inasmuch as the cavalry wing of the service must always be numerically far inferior to the infantry, the navy and marine, it is difficult to see the logic of making so important a concession to a branch of the service comparatively little used, who have a horse to carry the rifle on the march, and who usually fight dismounted. In view of the fact that on account of the shortness over-all of the new Springfield it was deemed necessary to increase the length of the bayonet, it would seem that if the additional four inches of barrel would give us a better rifle for every purpose, it would have been wiser to have placed the extra few ounces weight on the end of the barrel where it would be of daily use in improving the marksmanship of the army, than on the bayonet where it might never be used at all. The Krag rifle was issued with a thirty-inch barrel, and although the bolt action added at least six inches more to its length, it was a rather neat looking military arm. Its total length did not vary greatly from the well proportioned single shot match rifles, nor was it beneath the notice of that large and sensible class of big game hunters who still prefer a steady muzzle weight on their favorite hunting arm. Thus we see that it is possible for the soldier marksman, the civilian expert and the practical game shooter to meet on common ground in their choice of the points which go to make a perfect arm. The soldier of tomorrow must be at once a hunter, a scientific rifleman and a military marksman combined. Therefore his weapon must logically be of the composite order. The almost perfect work of the New Springfield proves that extremely long barrels are not necessary and that beauty and proportion need not be wholly sacrificed to secure ballistic perfection. I am of the opinion that a twenty-six or a twenty-eight-inch barrel on our present service rifle would be in the line of progress. The stock of a rifle is not a club, was never intended for one and should not be used as one; the day of the clubbed musket has passed forever in the military as well as in the big game field. Lieut. Whelen and Mr. Paul Jenkins, with their converted Krags, have shown us what is possible in the way of refining and beautifying without weakening the present type of military arm and it is greatly to be desired that our ordnance department should take a leaf from the book of experience of the American sporting arms manufacturer instead of taking their models from foreign countries. Sporting model rifles of most foreign countries are woefully weak at the grip. I have seen several German and some English sporting rifles split and broken at the grip by the shock of firing the regular loads. No doubt some of the trouble was caused by the excessive drop of the stock which, being three to three and one-half inches below the direct line of recoil, threw the shock against the grip which, being the weakest point, caused it to buckle and break. American arms are not usually made with an excessive drop except on individual order. It is a well established fact that the more experienced a

man becomes in the use of both rifle and shot gun the less drop he will require on his weapons. Our long range experts learned this early in their career, and every experienced trap shot knows it. The very latest arm for the use of experts (the Winchester tournament shot gun), bears in its general outline a most striking resemblance to the near-perfect match rifle of thirty years ago, and the dimensions of each are nearly identical. The new gun has a stock fourteen inches long, a neatly-modeled straight grip, a drop of  $1\frac{1}{2}$  inches at the heel and  $1\frac{1}{4}$  inches at the comb. Try and picture to yourselves your Krag, or New Springfield, with a 26 or 28-inch barrel, a stock with the drop and lines of a Winchester, a Parker, a Smith, or a Fox trap gun, whose models strong and shapely, over the composite result of intelligent study and cordial co-operation of both sportsmen and manufacturer. The prejudices of shooting men die hard. Even at this late date may be found many who cling tenaciously to the long barrel idea of pioneer days, when superiority as a shooting arm outweighed every other consideration. The coming of the repeater types, such as the Spencer, the Henry and the Winchester, and their performance in the hands of famous frontiersmen, did much to educate the public to an appreciation of the great advantages of speed of fire, convenience in handling and portability. The military arms of that period had comparatively little influence on the hunting rifle, although there seems to have been a gradually increasing demand for more powerful hunting cartridges which continued until the large calibers were again much in evidence. We may easily trace the growth of caliber of the hunting rifle from the 40 and 60 to the pound of the colonial pioneer to the powerful .45 and .50 caliber buffalo and grizzly bear rifles of the West. Economy was of course no small factor in the calculations of the early pioneers when the difficulties and dangers of transportation were to be reckoned with, and it was largely on this account that the small caliber was preferred. Until comparatively recent years, great accuracy was not expected or considered necessary with military arms, consequently they were usually held in contempt by the straight-shooting civilians and border men. Meanwhile private rifle makers with a genuine pride in their profession aided by an extremely critical public, wholly familiar with almost every kind of shooting weapon, continued to improve and beautify American hunting arms. The civil war was to a great extent responsible for the invention and appearance of many of the truly ingenious forms of repeating mechanisms which became more or less famous, although some of them were rather short lived. Army men in authority did not seem to take kindly to repetition arms, and it was not until every civilized government in the world was fully armed and equipped with high power repeating or magazine arms that our ordnance department began to sit up and take notice. Meanwhile excellent repeating rifles were being manufactured and sold in thousands to civilians, frontiersmen, adventurers, and even to the American Indians who were not slow to note their points of superiority as a sporting and war weapon. It would be difficult to decide without considerable study, whether speed of fire of repeating arms or the superior performance of the modern small bore exercised the greater influ-



ence on the development of small arms. The enthusiasm with which sportsmen have welcomed the automatic hunting rifle would indicate that speed of fire was the one great object to be attained. However, a brief experience with an inferior cartridge in an otherwise satisfactory arm showed conclusively that the success and popularity of an arm depends more on the nature of its ballistic

after he used that caliber constantly. Then came the day of the really small bores, the 303 English gun. Men found that rhino and elephants came down to well planted shots from that inferior weapon. Today no one who has had experience, burdens himself any longer with the old-fashioned heavy rifles that were so long dreamed indispensable. I think that shortly the use of even a .500 or a .577



A type of the American pioneer's hunting rifle, also used by early settlers in their Indian and border wars as a military arm. This particular rifle was formally owned by a Texan and used by him against the Indians and Mexicans. He fought under Gen. Sam. Houston, and used this rifle at the battle of San Jacinto. The rifle has a 44-inch barrel, is about 38 caliber, full octagon, and the outside diameter increases slightly toward the muzzle. Like most of its kind it has double set triggers and the sights are set very low on the barrel.

performance under practical conditions than on the ease or speed with which it can be manipulated. The 44-40 200 in the model 1873 Winchester was considered a marvel in its day, but its days were numbered when hunters began to use the 45-70-405 in the various makes of repeating rifles to which it was adapted; so, too, was the .45 a favorite until one had tried the 30-40 and other far-reaching military cartridges. The 30-30 was popular only until the various military cartridges were tried on game. Aside from the ballistic superiority of military cartridges, is the fact that they are made with great care, the standard of excellence is maintained and, as a rule, they are more easily obtainable than most makes of the exclusive sporting cartridge, more especially on the frontier. There are still many hunters who favor the large caliber rifle for big game and who can give good logical reasons for their choice. I believe however, that a consensus of opinion of all the big game hunters of the

cordite rifle will be uncommon. *They are not needed.* Any good rifle with a powerful powder charge will kill an elephant stone dead if the bullet, however small, is planted in the brain. It is quite common to shoot in this way, the largest bulls, even with the tiny .256 Mannlicher, or the .276 Mauser rifles. I have known an elephant to fall dead within 200 yards by one shot from a .256 Mannlicher, that penetrated the whole length of the body from behind, and at last lodged in the heart. On the other hand it is still quite easy, even with the most powerful of modern rifles to plaster an unfortunate beast all over with bullets, and not bring it down. Twenty large bullets were fired into one bull by my friend's professional hunter and his gun bearers, before the poor beast fell." I have learned from several other sources that the 8 m. m. Mauser or Mannlicher cartridges is a favorite with the big game hunters of Africa and in most cases is preferred to the heavier calibers. Mr.



A model 1898 Krag-Jorgensen. In this rifle we begin to see evidence of those modifications which mark the passing of the match rifle. Among these were shortening the barrel, reducing the caliber and the addition of the magazine. The Krag was far from a success from the viewpoint of the scientific marksman, when first adopted, but the cordial co-operation of civilian and military experts and progressive ammunition makers soon made the Krag an arm to be respected.

world would show a majority in favor of that class of cartridges commonly classified as "military." In the July number of *The World's Work* is published a most interesting account of an elephant hunt by Dr. W. S. Rainsford. The weapons used receive considerable attention and to the student of fire arms this article is full of information. It reads in part as follows: "Selous was, I think, the first man to try a small bore .450 (black powder) on elephants. He did so because one of his other rifles was not to hand when he wanted it. There-

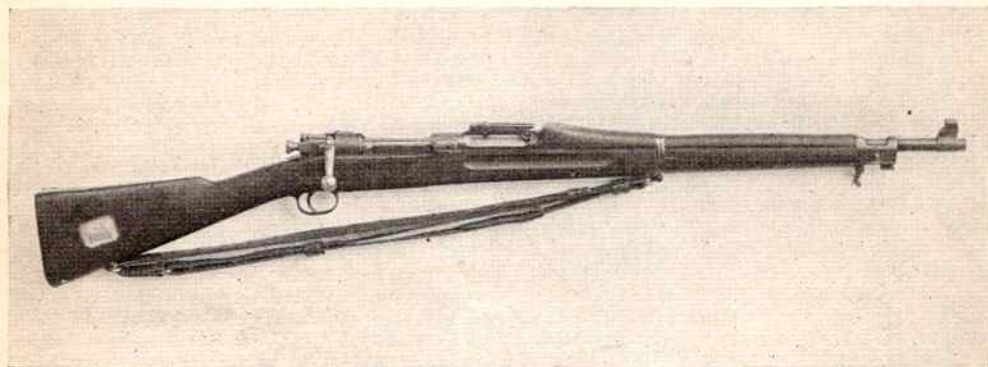
Carl E. Akeley, of the Field Museum at Chicago, carried an 8 m. m. Haene-Mannlicher on his former African trips and I know that a .256 Schoenauer Mannlicher forms part of his armament on his present expedition. The unqualified endorsement which the military cartridges adapted to various makes of arms have received for hunting purposes, from acknowledged authorities, prompts me to make the assertion that it is entirely possible to combine the military, the long range target rifle, and the big game hunter's rifle in one arm and



## The Outer's Book

produce an improvement over each, for its separate purpose. Every one of the cartridges designed exclusively for military use has proved to be an excellent hunting cartridge giving much better results than most of the cartridges that were specially designed for the game field. The 30-40-220 with both full and half mantle bullet, jumped at once into popularity as a hunting cartridge, having once used it on big game in a reliable rifle, no sportsman of discernment would care to go back to the 30-30 or others of its class. The .30 U. S. Government Model 1903, with its great velocity and heavy bullet, is a revelation to the hunter who uses it for the first time. Its range accuracy and power makes it a prime favorite at once. The New Springfield Shell model 1906, with its tremendous speed of 2700 foot seconds, is the latest competitor for honors in the hunting field. Although a bullet adapted to the hunter's use has not been officially used in connection with the 1906 shell, there is no doubt but that it soon will be. Pointed full mantled bullets weighing from 150 to 205 grains, are now

opportunity to expand, will soon become set and unprogressive. In many respects our own country has greater advantages and should make more rapid progress in the perfecting of fire arms than any other. The reasons for this are obvious. We have a great and ever increasing population, the male portion of which may all become gun users and by reason of their extremely high standard of intelligence and education, they may also become critics whom it might not be good policy to ignore. It is the policy of the war department to encourage young officers to specialize and fit themselves for instructors, and their splendid methods are beginning to show results not only in greatly improved marksmanship but also in the character of our weapons. It is true that we were forced to accept a foreign action for our national arm, but this does not seem to have been so much of a misfortune, as it enabled our ordnance board to select the best. Of course it is somewhat humiliating to be compelled to acknowledge that after half a century of protection to our domestic arm makers and their



The New Springfield, probably the most talked about rifle in the world, not faultless as yet, but rapidly becoming so. It is at once a long range target rifle of proved accuracy and merit; it needs only a proper bullet and change of sights to give us a superior type of a sportsman's arm for the heaviest game, while as a military arm it has no equal. With the adoption of the New Springfield our ideas of what constitutes a perfect arm for a specific line of service have changed somewhat and the New Springfield might still be so modified that it would be a still more desirable arm for each group of shooters.

being used with great success in our new military arm. The 303 British, another military cartridge is a favorite hunting cartridge and it is used in great quantities by African hunters, even the 7 m.m. Spanish Mauser purchased in numbers by our citizens as relics, are being used successfully as hunting weapons. The bullet weighs 175 grains and may be had in full metal patch or soft point. Through the influence of the National Rifle Association the National Guard, the Regular Army and kindred organizations, the American people, more especially the younger element, are rapidly becoming permeated with military ideas in everything pertaining to fire arms, nor is this surprising. In nearly every foreign country where a heavy military establishment is maintained permanently, and where military service is not only general but compulsory, the people know but little about fire arms other than the types used by them during their period of enforced service. This may account to a certain extent for the ready made, general appearance of some makes of foreign arms. It is inevitable that men educated along certain arbitrary lines, without

workmen, giving them a free hand in the field of invention and production we were unable to produce an action suitable for our national arm. With the essential points of the three types of arms so nearly identical, it would not be difficult to make our national service rifle answer for every purpose. The few minor changes required will readily occur to the shooter whose experience covers the three departments of rifle shooting. I am of the opinion that it would be possible for the soldier and the hunter to meet on common ground on the subject of sights. I cannot bring myself to think that the present sight on the New Springfield is altogether satisfactory from the view point of the experienced rifleman or soldier. The distance between the front and rear sights is absurdly short, considering the total length of the arm. Only the most scrupulous care in adjustment enables our riflemen to roll up the scores which are the wonder and admiration of the world. The range between the sights on the service arm might be almost doubled by placing it on the end of the bolt or on the grip of the rifle; thus placed, the unsightly hump produced by the



sight when folded down and the wooden hand protection would be no longer necessary. It was the policy of all the wise ones among the famous long range marksmen to utilize every inch of the abnormal length of their weapons, to secure the accuracy which they knew was possible with them. Every one who has watched the growth and development of rifle shooting in all its various departments must, like myself, have noticed the growing tendency to favor some form of the peep sight. Exclusive target shooters have always been partial to the peep and globe as a combination, which to them stood for the greatest possible accuracy, except the telescope sight, which was not then in general use. The invention of the Lyman combination rear sight has done more to educate the American shooting public to the advantages of the peep sight than any other cause. After its first appearance on hunting rifles and its good qualities became known, it made its way rapidly until at present some form or make of peep sight is found on a majority of hunting rifles now in use. The Buffington sight as issued with the 45-70 Springfield, was equipped with a peep sight with which good work could be done but like the present service sight, was too far from the eye to bring out the capabilities of either weapon or marksman. In competition with the army marksmen before the Krag was adopted, I noticed that they used the triangle or open sight in preference, while conceding the superiority of the peep sight for accuracy. Among the guardsmen were many competitors from the big game districts of Wisconsin, Michigan and Minnesota, who were accustomed to the use of the hunting rifle at home. These men invariably used the peep sight, enlarging it slightly for the 40 shot skirmish. Using some limited experiments with the 45-70 Springfield, equipped with a Lyman combination rear sight, placed on the grip, as a basis for my statement, I firmly believe that it is altogether feasible to sight our present service rifle in a similar manner and vastly improve the performance of the arm. To most riflemen the grip seems to be the natural location for the rear sight. Placed there on a service rifle, a sight of an appropriate model could be folded down when not in use, and be entirely out of the way and possibly out of sight, when not in actual use on the range or in action. The subject of sighting any type of rifled arms has not received the consideration or study to which it is justly entitled. Most rifled arms as now sighted give one the impression that the application of the sights was merely an after thought, and no provision had previously been made for them. Fortunately we are rapidly outgrowing that idea, and with the intelligent co-operation of the practical hunter, the scientific and experimenting civilian and the enthusiastic and progressive young soldier contingent, we may confidently expect to see our service rifle to remain at the head of the list.

In watching the merging of the various types into the composite arm, I have noticed a leaning of the sportsmen contingent toward the adoption and practical use of the gun sling on their hunting rifles. Another point worthy of notice is the preference shown for round instead of octagon barrels. Thirty years ago only a few outside of the long range shots knew that the gradually tapered round barrel was for several good reasons, superior to the octagon, draw filed barrel, with corners to wear bright, expand unevenly, and cause an erratic flip. The extended fore end, a feature peculiar to military rifles, is also growing in favor among the laymen. Those who have used it know what a splendid protection it is for the barrel, saving it from the thousand natural shocks which the rifle is heir to, while on the game trail. The one really objectionable feature which in recent years has made its appearance in rifle construction is the so-called take down system. While it is very convenient on a .22 caliber it is wholly out of place on a military, a target or a hunting arm. I have never seen a rifle, large or small, built on the take down system that would not work loose and become shaky. There should never be a joint between the receiver and the barrel, nor a break between the front and rear sights. This principle in rifle construction is so time-honored that it has become an axiom. I think we shall yet see some form of a recoil pad on our service and heavy hunting rifles. By this I do not wish to be understood as intimating that our young soldiers are lacking in the grit or stamina necessary to withstand the 16 foot pounds recoil of the New Springfield. I believe, however, that to reduce the effect of the recoil on the shooter will tend to improve the scores while the recoil pad will perform marvels in the way of protecting the arm from heavy jars which might put it out of service. For the first time in the history of America, military arms and methods are in the ascendancy. The wise policy of the government in permitting the sale of service rifles to civilians at cost, will have a far reaching effect and great educational value. There can never be a very dangerous or close monopoly in arms and ammunition while the government continues its present liberal policy, private armors will be compelled to make as good arms as the government and sell them as cheaply, or suffer by comparison. It is altogether fitting that the government should establish and maintain the standard of its arms, and there is no good reason why, with the protection and encouragement given domestic manufacturers, they too should not conform to the standards required and demanded by modern riflemen. While many of us still regard with favor the types of arms endeared to us by long years of association, we should nevertheless be ready to welcome everything that makes for the betterment of American arms.





# THE BOLT vs. THE LEVER ACTION

A REPLY TO MR. NEWTON

PART I

By E. C. CROSSMAN

IN carefully reading Mr. Newton's reply to my recent article, I am unable to find anything that seems to me to accord with facts, but he makes a number of statements which may be looked at askance, although Mr. Newton doubtless makes them in good faith. Summing Mr. Newton's article up, before starting to reply to such parts of it as seem to need reply, it has the earmarks of a theorist rather than a practical shot. No greater proof of this can be obtained than by reading his statement that he has never heard of our American rifles jamming—outside of the statements printed in old Recreation years ago. Probably not a reader of the Outer's Book can make such a statement, if he will use his memory—that he has never heard of trouble with American rifles jamming. Mr. Newton is doubtless sincere throughout. I take it that it is merely a case of not being in touch with the practical use of the rifle and the men who use rifles for other purposes than the Schuetzen game. Mr. Newton states that my article has left the American lever action rifle in such a "stamped up" condition that he is prompted by pity to take up their defense. I wish to call attention to the fact, while on this subject, that I have not attacked the American rifle—except in the indirect way of showing that in my opinion it is inferior in design to the up-to-date bolt type. Mr. Newton goes to much trouble to prove the age of the bolt action, which has not been disputed. It merely proves that the idea is correct, and with its modern improvements, it has become the finest action in existence. As applied to sporting rifles in the United States, it is a new thing as I have pointed out. Our high tariff, since the Mauser and Mannlicher have been brought up to their present high standard as sporting rifles, has succeeded in making them as rare in this country, as the famed Dodo. The argument is not regarding the bolt actions of 1879, to which Mr. Newton refers us as a sample of a perfect bolt action. The bolt action has been improved in the past thirty years—the lever has not, which is just the point under discussion and the point which I wish to make clear. The paragraphs on the bolt actions which have been used by American makers and which I admit did not prove popular—serve as an excellent demonstration of the saying that a little knowledge is a dangerous thing. Mr. Newton knew that our makers, the Winchester Company and the Remington people, used a bolt action of some sort—that it proved unpopular and he therefore reasons that all bolt actions are of the same class and will be equally

unpopular for evermore in the minds of American sportsmen.

Let us consider the rifles Mr. Newton holds up to us as failing to win the confidence of American sportsmen. It should be explained, first, that in writing of bolt actions, as compared with the lever actions used on our American rifles, I did not contemplate using the French Chassepot or the Prussian needle gun of the war of 1871 as an example of the perfect, up-to-date bolt action rifle. As before stated, the bolt action has been improved to keep pace with smokeless powders and new ideas in gun construction; the lever action has stood still. Of course, being accustomed to the failure of our rifle makers to go ahead and keep abreast of the changes in ammunition and latest discoveries in rifle making, Mr. Newton has naturally taken it for granted that the bolt action of 1871 is the bolt action of today and that like a certain model of an American rifle, the bolt has not been improved upon during the last 23 years. Hence Mr. Newton's holding up to us of the archaic and condemned Lee, and the equally archaic and condemned Hotchkiss actions as reasons why the new Mauser and the improved Mannlicher, as well as our own New Springfield and Krag are not the superiors of the shaky, pinned, screwed and riveted lever actions commonly used in this country. Mr. Newton is doubtless sincere in this, but it would have made his article of greater value had he taken the trouble to inspect a modern Mauser or our New Springfield and then examine one of the old Lee or Hotchkiss actions. Let us consider the first type of bolt action, which Mr. Newton holds up to us as being a typical up-to-date action, and one which has failed to make good in this country—the Lee. It is only necessary to ask Mr. Newton to dismount the two actions Mauser and Lee, side by side, with a stop watch held on him, to demonstrate to what a state of "up-to-date-ness" the Lee has been brought. It differs just about as much from the new Mauser type as one of Mr. Newton's lever actions. In simplicity, in strength and in finish, the Lee is as different from the Mauser as the Chassepot is different from the Lee. It seems almost useless to waste the space of the Outer's Book in arguments as to the weak points of the Lee action, whether made by Remington, or the arsenals in England, in view of the angry letters appearing almost daily in the English press on the subject of the English government's horrible mistake in retaining the old and weak Lee action in their new short service rifle. The row in English shooting circles has progressed to the stage where



even the government admits the mistake, but says that there is no available money at hand to effect a re-armament of the English troops. The rifle adopted was of the short barreled type, like our New Springfield. To get the required velocity, with the short barreled type of rifle, it was found necessary to use a cartridge giving somewhat the pressure of our New Springfield ammunition. But they didn't use it. The weak Lee bolt, having no locking lugs on the forward end, would not stand over 40,000 pounds pressure and even at this, was close to the danger limit. The English ordnance people are therefore facing the cheerful prospect of going into battle, when their next war comes, with the troops armed with a rifle of the archaic type and lacking the flat trajectory and consequent increased danger space of the rifles of other nations. No one, keeping in touch with the developments on the other side of the pond, would make the glaring mistake of holding up the Lee as an example of the modern type of bolt action. Just one quotation from the shooting weekly, "Arms And The Man," reviewing the situation in England, and I will drop the subject of an action that has been proven beyond preadventure to be as out of date as Mr. Newton's lever action:

"Our English brethren are not without rifle and ammunition questions of their own. A very serious error, was made when the present short rifle was adopted by England. *Their bolt without a forward lug* will not stand a chamber pressure of over 20 tons. That is, we believe, the outside figure. *Our own service rifle* (Practically a Mauser.—E. C. C.) short barreled and light, is equal to 52,000 pounds chamber pressure and possibly more." Then follows a quotation from the Territorial Service Gazette. "It may be accepted almost without hesitation that lack of available funds must render the question of the rearmament of the British infantry at present needless to raise." The remainder of the article from the English paper is a review of the methods in which something can be done to patch up this poor Lee into a modern rifle. Note that rearmament of the British infantry is urgently needed; that only lack of funds stands in the way and this too, after the present rifle was adopted but a very short time ago.

Mr. Newton holds up to our gaze, the ancient and deceased Hotchkiss action as another type of the modern bolt action which failed to find favor. Two reasons why it did not become popular were that it was as much of a makeshift as the lever—and it was made by a factory that is not noted for its fine finish or attention to the balance of the arms which it turns out. Even a Mauser can be finished in a poor enough way to make it unattractive to the prospective purchaser. It is not necessary to say much about the Hotchkiss. The bolt and magazine were made up of over *twenty-nine* parts as compared with about a dozen for the modern Mauser. The Hotchkiss was hard to take apart, it was not particularly strong, it was poorly finished and it proved a failure—through its own inherent weaknesses—long ago. To sum up this part of Mr. Newton's letter, the American made bolt actions—Lee, Lee straight pull, and Hotchkiss, failed to find favor for the good and sufficient reason that they were nearly as weak and complicated as the lever action; they were equally as deficient in balance and finish; they were about as

much like a modern Mauser or Ross as the old Chassepot and last but not least, they were put on the market at a time when the lever-action—in strength—was sufficient for the low power cartridges used. In simplicity of dismounting, the old type of bolt—the American breed—offered but little advantage over the lever action, with an inferior speed of fire. It should be remembered that the argument is not regarding archaic bolt actions nor about the poor examples offered by American makers. Twenty years ago, or even ten, the lever action was strong enough to stand the pressures developed by the ammunition used at that time. But, a new era is at hand. Pressures are running up and up in both military and hunting rifles. In England, more than half a dozen of the largest makers advertise rifles and ammunition developing over 3,000 foot seconds velocity. The cartridges for which the lever actions were made—and not improved since—developed from 15,000 pounds pressure to the square inch, to 30,000 and gave initial velocities of from 1,200 foot seconds to 2,000. Our modern cartridges develop from 40,000 to 50,000 pounds breech pressure and we get from 2,000 foot seconds initial velocity up to 3,100 foot seconds. The ammunition has changed year by year, the lever action has stood still. The 1886 model of one company is admittedly the best and strongest of all its actions. This by no means implies that it could not be improved upon; it simply has not been, because with the form of locking bolt which this company uses, they had reached the limit with this model. Their later models, notably the 1895, made for infinitely more powerful cartridges, are decidedly weaker than the older model.

Just one more quotation from a well known English magazine, "Arms and Explosives," and we will pass on from the discussion of what is already known to most well-informed people—the weakness of the actions which Mr. Newton holds up as examples of perfect bolt action rifles which failed to find favor in this country: "An extremely interesting article in the Times of the 14th ult., raises once again the subject of settling at an early date the very serious problems incidental to the obsolete design of the present service cartridge and the virtual impossibility of making any substantial improvement without first *modernizing the rifle which fires it*. The well known defects of the British service rifle allow a very small margin of safety, compared with what exists in the rifles of other nations. A great and monumental error was committed when the short rifle, which was virtually a new arm, was allowed to be introduced into the service, so perpetuating the *structural defects* of the old weapons." This is the new and up-to-date rifle which the Remington Company failed to make popular in this country, the action being practically the same in both cases. So much for strength of the Newton type of bolt action, and the modern Mauser or Ross.

The question of finish and ease of taking down is one which can best be appreciated by the man who has taken down and examined the fine finish of such rifles as the Sauer-Mauser or the Schöneaur-Mannlicher, and who knows how American factories habitually finish their rifles. Discussing the finish of American rifles, as compared with the foreign, selling abroad for about the same price as our rifles bring in this country, is useless. Only a



comparison of the two can make clear the superiority of the foreign rifle in this respect. Mr. Newton holds up the Savage as proof that the American people do not eschew new things, merely because they are novel to them. The Savage gained in popularity by leaps and bounds, as would the new Mauser, for example, if it could be purchased at the price of a Savage. Mr. Newton's frank acknowledgment of the quick gain of the Savage in popularity assists me greatly in my argument for the bolt action rifle, for this reason. The Savage is a hybrid, being a compromise between what we call the bolt action and the lever action. Like the Mauser and other bolt actions the Savage bolt contains the firing pin, main spring and the sear notch. It has no exposed hammer; it does not use the vertical locking bolt and last but not least, the cartridges are carried in the box magazine type of magazine. It is hard to see how a lever action rifle could approach any nearer to the bolt action idea and still be a lever actuated rifle. Mr. Newton, through his confession of the rapid gain of the Savage in popularity, acknowledges how anxious to get away from the archaic type of lever action, our sportsmen are. Americans, as pointed out, are a people of habit—as they are great believers in persistent advertising, regardless of the merit of the article advertised. The Savage was a departure from the old out of date form of tubular magazine; it had graceful lines and good balance; it had a strong bolt; it was without the old hammer, which has been used ever since our first matchlock; it was better finished by far than any other American arm, and withal, was lever actuated. It was persistently advertised. Force of habit makes an American sportsman prefer the lever action, but the equally strong belief in advertisements made the clan of sportsmen investigate the combination offered by the Savage and the manifest advantages offered by this rifle, quickly made it the favorite. Note that the habit of thinking the lever indispensable to a hunting rifle was not broken when American sportsmen adopted the Savage as a recognized and excellent type of hunting rifle. The Savage is a long step ahead but is still a long way behind the bolt action in ease of taking down, and simplicity. Mr. Newton points out the popularity of automatic type of weapon as proof that Americans are not creatures of habit. No stronger demonstration of this force of habit and dislike to stray off after strange gods, can be had than this very automatic type of firearms which Mr. Newton believes is such an excellent example of the readiness of American sportsmen to take up anything new and good in the firearms line. Any unprejudiced man, reading over the advertisements and the advantages claimed by the automatic type, will agree that if these claims be true, then every firearm not actuated in this way, is nothing more than a fit candidate for the junk-heap and that factories that continue to make the old style hand actuated arm are merely piling up useless weapons which they will never be able to sell. We have automatic rifles, shotguns and pistols, in sufficient variety to supply every want of the shooter. In spite of this fact and the manifest advantages supposedly possessed by the automatic, there are ten hand-functioned weapons sold to one automatic at the present time. This is not because the automatic idea is very new. It is not. The automatic type of weapon

has been with us for years, its virtues have been advertised for years and there are few shooters who have not handled or shot the automatic type of weapon in some form. Yet, in spite of this superiority over the hand actuated rifle or revolver or shotgun, our factories making the old types of firearms grow year by year, to accommodate the increased demand for their output. The Colts Company recently found it worth while to instal new machinery at a cost of thousands of dollars to make certain slight changes in their revolvers—and they also make automatic pistols. The makers of fine doubleguns report no falling off in the demand for the old type of hammerless shotgun, while the rifle factories making the old type of weapon, do not seem to be accumulating dust and cobwebs on their machinery. If the automatic type is so far ahead of the old style weapon, why do Americans continue to purchase the older arms? Is it, as I stated, because Americans are a people of habit and that the reason the automatic has not entirely displaced the hand functioned weapon is the same reason the makers of the make-shift lever action rifle can still foist their product on the public? The ordnance boards of every civilized nation on earth, report that the bolt action is the superior of any other type; the lever action rifle has never been used by any civilized army; the advantages of the bolt action are so apparent that when Uncle Sam decided to adopt a different rifle from the old Krag, the lever action was never even considered as a possible substitute, and yet the great bulk of the shooters of this country continue to purchase rifles fitted with actions invented thirty years ago and never improved since. The bolt action, as I stated in my article, is a new thing to American shooters, in its modern form and made by factories that take a little pride in their product and do not believe that a mediocre article, puffed by huge advertising is better than a fine article which advertises itself. Not one man in a hundred, interested in guns and shooting, has handled or shot a fine bolt action rifle, either New Springfield, Sauer-Mauser, Waffen-fabrik-Mauser, Schoneaur-Mannlicher or one of the fine English-made Mannlichers or Mausers. I know this to be a fact from the enormous amount of correspondence I receive in regard to the foreign bolt action rifles, from whom they can be obtained and the details of their appearance. Therefore, the bolt action as at present made for high pressure smokeless powder, finished as high class rifles should be finished, and balanced somewhat different from a baseball bat, held out by the light end, is a new thing to our sportsmen, all dates on relics in some one's private junk-heap, to the contrary notwithstanding.

I have used the Lee-Remington, both in the .45 caliber and in the modern small bore, high pressure type, for years. I was perfectly familiar with the Hotchkiss, but would not own one. I have used the Lee straight pull and have used the Lee-Speed, of England. I used the Krag from its first issue to the National Guard and the New Springfield following, and while I was impressed with the strength of the Krag action and the ease of taking down of the bolt type, I still considered the lever action to be superior for hunting rifles—because I had not seen the bolt applied to a rifle made for hunting. I owned a Mauser of the Spanish War breed, but the bolt handle sticking straight out and



its general clumsy appearance did not impress me favorably as a hunting arm. The New Springfield was the first rifle that seemed to me to be what I would want in a hunting rifle but it was not until I saw and shot the Mannlicher that I realized that the bolt action as at present turned out by the foreign factories was ahead of the lever action in every way, from balance to finish, with the added advantage of the strength and simplicity of the bolt, which I had always admired. Foreign makes of bolt actions are not advertised in this country to any extent. Sportsmen are not familiar with them and even were they advertised in everything from the Epworth Herald to the Bartender's Guide, like some of our old friends, it would take some time to make them popular, for the reason given—the conservative disposition of our people to let the other fellow do the experimenting, even though for military purposes the actions had stood the test for years.

Readers with some sense of humor will probably come to the conclusion that Mr. Newton is attempting to spring a joke of some sort on them in his statement that he has never met anyone who has been troubled with jams in our American hunting rifles. Mr. Newton goes on to say that he has used several rifles of this type—referring to the lever action—without encountering this trouble, and that his Krag and New Springfield both jam at times. Mr. Newton's personal experience proves as little as my own, mine being that the lever action *does* jam and that the Krag and New Springfield do not when *properly handled*. It is hardly worth while arguing over this point. Practical rifle shots, those who have hunted and who have mixed with men who use rifles for other purposes than to fill up private museums, know that our hunting rifles *do* jam and that certain makes are more prone to do this than others. I venture to say—and I believe I will be backed up in the statement by the real rifle shots who read the Outer's Book—that every man who has hunted for any time and who has used the rifles of different American makes, has experienced trouble with the rifles jamming, failing to repeat or other kindred trouble. On a recent hunting trip I took in Northern California; there were seven of us in the party, two half-breed Indians; two mountaineers—professional bear hunters—and three city men. We all agreed that the lever action would jam and every one of us had some experience to relate in that line. One make, using a tubular form of magazine, which was attacked in another publication some years ago, came in particularly for censure. But they all agreed that even the Winchester would jam as nicely as any other. Nearly every user of the Savage will find trouble with the magazine failing to bring up the cartridges according to schedule or the magazine refusing to let the fourth and fifth cartridge down into place when loading it. And yet this rifle is the best American rifle made, in my opinion. The fact that Mr. Newton has never heard of any instances of this sort—and they are frequent—can prove but one thing—that he knows very little of the practical use of the rifle and has never done much hunting. His New Springfield which fails to repeat, does so because he fails to draw the bolt back to the limit of its travel, sufficient to allow the top cartridge to rise into place. The Krag will fail to work if the cartridges are loaded into the magazine with the

rim of one cartridge ahead of the one above it—thus preventing the upper one from going forward. This is also prevented by a little care in loading. Those who have watched the work of military riflemen—proficient military riflemen—in rapid fire will agree that the Krag or the New Springfield repeated when it was called on to repeat.

Every rifle will, of course, jam at times; the point is, how easily and quickly may the jam be reduced. Here is just one quotation from a letter recently received from a well known military rifleman, author of a standard book on shooting and a well known big game hunter—in other words a practical rifleman: "I guess I have shot the Krag about as often as any man living. I averaged about 6,000 rounds per year from 1901 to 1907, and I've never had a jam nor a single part break, nor any trouble whatever." Here is another quotation from the same letter which might interest the reader: "I have at present a little Krag Carbine, which I have used quite a little for hunting with excellent results. It still has the military finish but the interior has been thoroughly gone over, the stock repolished, Lyman sights attached, a hand-guard without sight recess and a sling strap and rifle swivels added. It is a very handy little weapon and I would not give it for any lever action I have ever seen." Mr. Newton has had misfires with the bolt action rifle, due to not pressing down the bolt handle. Try shooting a lever action with the lever action partly open. Mr. Newton has dug out his tape and measured around and around the New Springfield and the Model 1886 Winchester and has presented an imposing parade of figures as proof that the Winchester 1886 Model is the stronger of the two. The question of strength of the two actions is so well settled by the tests of our ordnance department as well as the boards of other nations that it is an imposition on the editor of the Outer's Book to ask him to print anything more on the subject. Mr. Newton's figures sound well—until one comes to consider the place where these bolts do their locking. Then Mr. Newton's figures rather fade away in their significance. As stated before, the bolt of the Mauser or the Mannlicher or the New Springfield—a Mauser with slight changes in detail—locks at the *head of the cartridge*, inside a closed-over receiver. The lever action bolts are locked three inches or more away from the point of strain. Thus when we consider figures, we have to consider whether these figures lie or not. The 1886 Winchester is the strongest of all that company's models, as they admit. But—it is not made for cartridges giving enormous chamber pressures. For cartridges of the "high concentration" type, to quote the powder companies, the Winchester Company use their 1895 Model, having a single locking bolt and that further away from the cartridge than the bolts of the 1886 Model. The tests of the United States Ordnance Department proved that this action would grow shaky and unreliable in 2,000 rounds—I believe these are the correct figures though my informant says less. When a man tries to prove that the lever action Model 1886 Winchester is "five times" as strong as that of the New Springfield, he is wasting his time. As stated, the 1886 Model is the strongest of the Winchester models and is likewise *not* used for the cartridges requiring a very strong action. The Model of 1895 is the one to consider when comparing it to the bolt



action made for high power cartridges. The man who will deliberately examine the Model 1895 Winchester and then select it in preference—as far as safety goes—to the New Springfield or Mauser, for the 1906 ammunition, is welcome to his choice, but he will soon need a new action if he does much shooting.

It is rather strange, that the United States, Germany, France, England, Austria, Japan, Russia, Spain and the northern nations, Norway and Sweden use the bolt action rifle for their troops in preference to the Model 1886 Winchester or the 1895. Just where is the dividing line drawn between the requirements of a military man and a hunter? If the ordnance boards of all the civilized nations on earth find in favor of the bolt action, what peculiar invisible quality does the lever action possess that it should continue in favor for high power cartridges. Of course a tariff of some 40 per cent on the only modern bolt action rifles that are obtainable, is one reason why the old unreliable lever action stays with us. The Krag which Mr. Newton says blew out its bolt, was fitted like the other Krags, with a single locking lug, against three on the Mauser or New Springfield. Any rifle will blow up providing enough powder is crowded into it. It is not strange that some Krags went bad, considering the enormous number of them, in use and the enormous number of shots fired through them, something that cannot be said of the Model 1886. There is but one modern cartridge made for the Model 1886, the .33, that being a comparatively low power cartridge, of little more power than the .303 Savage—Savage loading. Mr. Newton has never heard of a Winchester bolt springing or giving way. He also harks continually back to the Model 1886 which is not made for the type of cartridges used in the bolt actions of the present day. The Model of 1895 is the one to use in making comparisons. I will simply refer Mr. Newton to Mr. E. L. Stevenson, who in the April issue of another magazine says: "Less than two weeks ago I had a lever action—Model 1895 Winchester—open up with me until the hammer was at half cock and the lever nearly got away from me. Ten years ago I stood by a table on which was a young Eskimo, lying on his back. I was there to help hold him down if necessary, while the doctor repaired the damage done to his face and eyes by the breech-bolt of a lever action gun blowing out. There were no anaesthetics handy so the boy had to take it straight." This was one of the "five-times as strong 1886 Models" used with a black powder cartridge and bushel of just such instances can be delivered to Mr. Newton, if needed. No statement is noticed from Mr. Newton as to the strength of the Model 1895 Winchester, which is made to take the modern high pressure cartridges

of the class of our new Model 1906 ammunition. He is extremely reticent as to this action, for some reason, when it is really the one in which we are interested, as handling the up-to-date cartridges.

The conclusion of Mr. Newton's article is characteristic. I might say, however, that I have learned enough about a bolt action to know how to operate a New Springfield so that it *will repeat*; that I can load a Krag correctly; that I know enough to keep my rifle's bolt handle pressed clear down when endeavoring to fire it; that I have been out on enough hunts and have associated with real riflemen long enough to at least hear of instances of American rifles jamming. "There are none so deaf as those who do not care to hear." Not until last year, was I fortunate enough to get hold of a foreign bolt action sporting rifle, although I have used this type of rifle in the military models for years. This only goes to show how scarce a high protective tariff can make a really fine article. Or to use Mr. Newton's words, I am the only man out of 80,000,000 who can see the advantages of the bolt action over the lever. This being the case, I take great pride in being the one man in eighty million who is able to see the advantages of the action that has been adopted by every military establishment in the world, when applied to the sporting rifle. Perhaps Mr. Newton can explain why the high priced English makers of fine rifles, do not purchase the right to use our splendid "five times as strong as the Mauser" actions, instead of using the Mannlicher, Mauser and Lee-Enfield types. I might also state for Mr. Newton's benefit, that although but a year has elapsed since becoming acquainted with the *foreign* bolt action *sporting rifle*, I have had sense enough to get rid of my antiquated lever action rifles and purchase both a Mannlicher and Mauser. I thus have a year the best of Mr. Newton in progressiveness.

In passing I believe the following letter from the United States Army School of Musketry in regard to the experience of competent rifle shots with the New Springfield, will put the quietus on the statement which Mr. Newton puts forth in regard to the bolt action jamming:

My dear Mr. Crossman:—Replying to your letter of the 22d inst. I would state that it has been the experience at the school with all rifles and all men in all kinds of fire, that the rifle feeds up the cartridges in front of the bolt when the bolt is drawn fully back and forth at any rate of speed. Jams occur not to exceed about one per thousand shots fired, and may usually be directly attributed to improper working of the bolt rather than malfunction or failure of the feed due to speed of manipulation. Very truly yours, G. W. M. Lau, Major, 20th Infantry, Commandant.

[TO BE CONCLUDED]

*Continued on page 89*







"A GUN SHOOT IS A GOOD PLACE TO SPEND AN AFTERNOON"

## WHY WOMEN SHOULD LEARN TO SHOOT

By Mrs. ADOLPH TOPPERWEIN

WITH ILLUSTRATIONS FROM PHOTOGRAPHS BY THE AUTHOR

TO the woman who is fond of out door life and exercise there is nothing which benefits her more, nothing more invigorating, healthful and fascinating than shooting. To learn to use fire-arms of any sort fosters out-door life, and outdoor life to anyone, especially to the woman whose duties keep her indoors, means health. A great many women play golf and tennis, row, and do other strenuous things because they get interested in these games or because it benefits them, and it is not at all difficult to pick the out door woman from the one who spends her time indoors; a healthful color, clear eye and a robust form tell the story. Shooting in all its branches, be it with the shotgun, rifle or pistol, is a most fascinating sport and an accomplishment of which anyone should justly be proud. Although it is something indulged in mostly by the sterner sex, it is within the power of every woman to learn the use of fire-arms. It is not necessary to become an expert to enjoy the sport of shooting. Anyone with systematic and intelligent practice, and of course a little patience, can in a little while make wonderful progress. As a general rule most women have a natural horror of fire-arms and are too timid to try. Moreover, they are not encouraged enough by their male friends and the average woman today cannot tell you the difference between a double barreled shotgun and a rifle, simply because they have never had the opportunity to become acquainted

with these things. Husbands and brothers make a great mistake by not encouraging their wives and sisters on this subject. I always feel sorry for the woman who marries a man who is a sportsman and fond of hunting and shooting, who after he has worked hard to get his holiday, hurries home, his eyes fairly dancing with joy and expectation, saying, "Dear, I am going out this afternoon with my friend B. for a hunt. They tell me the birds are thick. I'll be back Monday morning sure. Now don't worry and don't be lonesome, will you?" How many women have heard this story on a Saturday just after the quail season has opened! Now, mind you, this man dearly loves his little wife, but a man must have some recreation. He is fond of shooting and he would dearly love to take her along, but Lord! she is so afraid of a gun, and so he hunts up his friend B. and out they go, while his wife stays home, worries along the best she knows how, eagerly awaiting his home coming. Teach your wife how to shoot. It may seem awkward to her at first, but have a little patience with her. Don't scold her when she tries to close both eyes at once. Correct her in a gentle manner. Tell her she is the best side partner you ever saw, and perhaps before you know it she will have you looking for your laurels. You cannot keep her home now, she knows just when the hunting season opens, she talks guns and ammunition just like she knew all about it, and every time she goes out



## The Outer's Book

with you she learns just a little more. Every trip in the woods is just a little different, there are so many interesting things to learn. The little shotgun or rifle has lost all its horrors and it is not nearly so awkward to handle now and doesn't "pop" nearly so loud.

Since you are a woman, perhaps you do not care to kill game yourself, being a little tender hearted, but there are plenty of other things to

is a vast difference between the several arms. Say that you wish to learn to shoot the shotgun for game shooting in the field, then I would advise you to begin with a light 16 gauge weapon of good make. Do not waste your time and money on a cheap arm, as you will surely discard it soon. Also do not begin and spoil your efforts with your husband's or brother's gun. This is a common mistake most women make, and one which, as



MRS. ADOLPH TOPPERWEIN, THE GREATEST GUN WOMAN IN THE WORLD

test your skill on, which can afford you no end of pleasure. There are hundreds of marks in the woods and in the open, different in shapes, colors and sizes, and you can have a great amount of good practice by selecting such marks as strike your fancy. Let us take it for granted that you desire to learn to shoot. Do not undertake too much, and attempt to get familiar with shot gun, rifle and pistol all at once. To try to master them all at the same time would only result in failure, as there

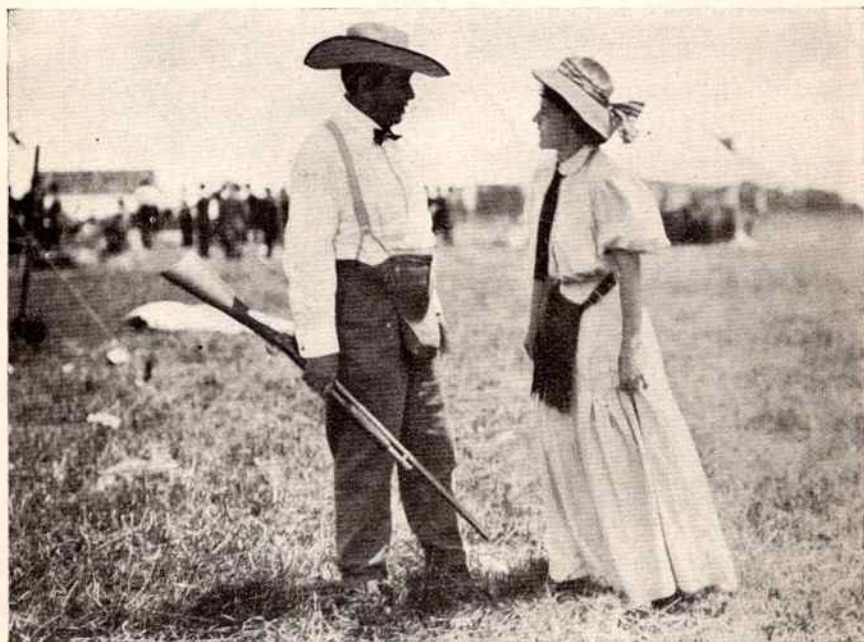
a rule, spoils their chances of ever becoming familiar with or used to a gun. A gun suitable for a man is, as a rule, totally unfit for the average woman. Your husband's weapon may be a good one, but you may be sure it is too long in the stock, and, likely, a little too heavy for your comfort, and to shoot it would perhaps result in serious injury to you. Secure a 16 gauge, if possible, or a 20 gauge. I think, however, that a 16 gauge is a much more desirable arm and if you are learning



HER FIRST LESSON



AT THE SCORE



"AT THE SHOOTING GROUNDS YOU WILL ALWAYS FIND A CROWD OF GENTLEMEN"



## The Outer's Book



"KEEP THE MUZZLE POINTED DOWN"

with the intention of shooting in the field, get a Winchester repeating gun. Now take the gun to some good gunsmith and have him cut off the stock so it will measure about 12 or 12½ inches including a recoil pad of soft rubber. This gun has a 28-inch barrel either modified or full choked; for a beginner a modified barrel is best. First get familiar with your purchase, learn to load and unload it and if you are a little awkward use for this purpose empty shells instead of loaded ones. When you do this always keep the muzzle of your gun pointed down, and never under any circumstances point your gun at any human being even if you know it is not loaded. Follow this rule as long as you have anything to do with fire-arms. There are some women, and the Lord knows some men, who do not seem to realize the awful danger of fire-arms when handled carelessly, who never seem to know which is the "business end" of a gun. After you have become familiar with your weapon have some one to show you how to "hold." This may seem a little awkward to you at first, but with a little practice you will get the right position naturally. Don't shoot cramped up, hold you gun as gracefully as you can, at the same

time holding it firmly against your shoulder. The tighter you hold it to your shoulder the less you will feel the recoil. Always hold your gun the same at every shot. The recoil of course may surprise you at first and you may feel a bit sore after your first day's trial. Your shoulder may also be a little blue, but don't worry about it, it won't kill you. All strenuous sports have their ill effects at first and are tiring to some parts of the body until the muscles are accustomed to the exercise. The proper load for beginners is a very important question and should be studied closely. Do not try to shoot a very heavy load of powder and shot at any time. For a 16 gauge gun a load of 2½ or 2½ drams of smokeless powder and ¼ ounce of shot is very good, having very little recoil. With a gun that fits properly any able bodied woman should be able to shoot without suffering any inconvenience, provided, of course, she does not attempt to shoot all of her shells at one time. Try about fifteen or twenty shots. They won't hurt you. Shoot as often as your time allows you to, so that your arm and shoulder muscles "get set." If you are shooting with the intention of trying your skill at the trap, which is to my mind



READY TO SHOOT



the greatest sport of all, you should by all means begin with a 12 gauge gun, weighing about 7½ pounds. I do not believe a very light gun suitable for trap work and although 7½ pounds may seem a little heavy, any woman weighing in the neighborhood of 125 pounds will have little trouble in handling that weight. Begin with a load of 2½ drams of smokeless powder and 1 ounce to 1½ ounce of 7½ shot. Afterwards you may increase your load if you wish to do so. Your first lesson should be at straight away birds. (Targets thrown straight from you). These should be shot at as soon as possible. Do not hesitate too long, and be careful to get well over them. Have some one "who knows" stand behind you to correct your mistakes. Do not feel disappointed if you miss them all the first time you try, but keep at it, resting between every 10 shots and trying again. After you can break, say 50 per cent of these straight aways, begin shooting at different angles. These will trouble you at first, perhaps more so than the others, as you must give them the proper "lead," or in other words, shoot a little ahead of the flight of the target, swinging your gun with the bird. The main point is never to get im-



LOADING THE REVOLVER



TRICK REVOLVER SHOOTING

patient when you shoot, and don't get discouraged at what may look to you like a poor score. No one can break them all. Trap shooting is excellent practice for field shooting and there are now a great many ladies who grace the traps. I am very happy to say there are a number of them who shoot with such remarkable skill that they often defeat their male friends. A lady need not hesitate at any time to attend a shoot at any organized gun club at any place. It is perfectly proper and she will always find a crowd of very courteous gentlemen who will not only be glad to see her, but will also extend her every possible courtesy and make her stay as pleasant as possible. She need not hesitate to spend the afternoon at a local gun club together with a crowd of gentlemen, such as I have always found a true sportsman to be. Nearly every shooter at the traps will have an individual idea as to what kind of a gun, or load, is best adapted for target shooting and it is sometimes real amusing to hear the arguments regarding this or that load. However, most shooters use what they think best, sticking to the load with which they get the best results. I use for trap



shooting a regulation Winchester trap gun, weighing 7½ pounds, with a 28-inch full choked barrel, and a load of 3½ drams of Dead Shot smokeless powder and 1¼ ounce 7½ chilled shot. I can shoot this combination all day without the slightest inconvenience.

The woman who does not care to shoot the shotgun at the traps, or in the field, and who is perhaps physically unable to handle a heavy gun but wishes to shoot, should begin with a rifle. With the many modern rifles now on the market it is within the reach of everyone to own a rifle. A light .22 caliber Winchester repeater is a most delightful weapon and on account of its general construction and easy manipulation, it is especially adapted for ladies. Another good arm is the little .22 automatic which is perhaps the easiest gun for a woman to shoot, as it works automatically. However, the ammunition is a little more expensive and has a great deal more power than the little .22, which is perhaps the most desirable ammunition for the beginner as you can shoot it almost anywhere. The modern smokeless ammunition is very cheap and very clean, and you can spend the afternoon shooting several hundred shots with but little expense. An expert with a little .22 can do most wonderful things at moving and flying objects, but the novice does not want to try these things. Shooting at stationary objects and targets is advisable. To shoot the rifle accurately takes a good deal of practice, but it is not nearly so strenuous as shooting the shot gun, as there is little or no recoil, and the arm is also much lighter and easier to handle. There are a great number of ladies who shoot the rifle remarkably well and a glance through the columns of our shooting journals show you the many good scores made by female members of different rifle clubs. After you have gotten familiar with your rifle and know how to "take sight" and shoot with some degree of accuracy, you will think your little weapon is worth its weight in gold and will not part with it at any cost. Target shooting at stationary or moving objects is most fascinating, and the beauty of the small caliber rifle is that you can, if you live in the outskirts of the city, do your shooting right at home, being careful, of course, to place your targets in front of some suitable back stop, generally made by using a box backed by a steel iron plate to stop the bullets, as you cannot be too careful, for the little .22 cartridge, although small and innocent looking, is a very wicked shooter and its range is far greater than you have any idea. You can even shoot your rifle right in the house, if the weather is bad and you wish to practice. A little range fitted up in the attic or cellar is easily arranged and will afford you endless pleasure. If you are fond of tramping in the woods you cannot possibly get a better companion than a .22 caliber rifle. It is large enough to kill any kind of small game.

Shooting the pistol or revolver is an art entirely different from shooting the rifle or shot gun. On account of the shortness of the barrel and the fact that the weapon is shot with one hand only makes

it more difficult to shoot properly, and even if you are an expert you must not expect to make the scores with your pistol that you are making with your rifle. The knowledge of shooting the revolver or pistol is perhaps the most practical in the shooting game. It is not necessary to become an expert but every woman ought to learn to handle the revolver in such a way that she can, if necessary, protect herself from danger. This is especially good for ladies who travel, and those who are often placed in a position where they are compelled by circumstances to be alone at night. A little knowledge of how to shoot a pistol is then often a big protection. The mere sight of a revolver held in the hands of a woman in a business like manner has its effect on any intruder you may encounter. A good revolver for protection and to carry with you in your traveling bag is a .32 or .38 caliber Colts' Police Positive, with three or three and a quarter barrels, or a .38 caliber Smith & Wesson hammerless safety. Any of these revolvers are safe and are most powerful and accurate shooters, easy to carry in your grip or handbag, or concealed in your muff. For target shooting your revolver or pistol should be fitted with target sights and six or eight-inch barrels. The Colt's and Smith & Wesson make the best target revolvers. There are also on the market several excellent target pistols, single shot arms with six, eight or ten-inch barrels, fitted with very delicate target sights. Most of these arms are chambered for the .22 caliber cartridges, which give excellent results. If you intend to shoot a revolver or pistol do not expect too much and do not be at all surprised if at the first attempt you miss your target clean, even if you shoot fairly well with your rifle. Shooting accurately with a revolver is quite a different proposition from shooting a rifle and you must not expect to make the same scores with your revolver that you are making with your rifle. The main point is to get familiar with the use of the revolver so that you are not afraid to handle it, and to learn to shoot it well enough so it will be of use to you in case of an emergency. A good way to practice with your pistol or revolver is to go out where you can secure for a back stop a high sand bank. Put up a paper target (not too small) or a wooden box, say about 2x3 feet, step back ten or fifteen paces and then see with what degree of accuracy you can place your shots. If you can hit the box every time you are not at all a bad pistol shot, and with a little practice you will place your shots inside of the paper target and sometimes in the bulls eye. I should advise the use of smokeless ammunition at all times as it gives less recoil and less smoke and is very much more pleasant to shoot. I think that every one should get familiar with the revolver and get familiar with it in such a way that you can pick it up at a moment's notice and shoot with some degree of accuracy, for there may come a time when such knowledge may save your life or that of others. I will say to the woman who takes up shooting, be it with the shotgun, rifle or revolver, at the traps, in the field or just for general amusement, stick to it, it is an accomplishment of which any one may justly be proud.



# PRAxis OF THE SHOT GUN

## PART II

By CHARLES STILLMAN

HAVING selected a gun that "fits," the tyro comes to the shooting part of the programme, but before taking up the art of shooting, attention should first be given to the loading of the gun. Among the younger generation of shooters there is comparatively few who have a clear idea about loading shotgun shells. In these days of mechanical perfection, almost all shells are purchased loaded for use, and not many devotees of the scatter gun care to load their own ammunition. Even granting that you find it much the better way to buy the ready-to-use shell, knowledge is always a handy partner and you should know the why and wherefore, even though you decide to let others load your cartridges for you. When shooting in the more remote villages you may run out of your particular load, and as the country store carries but a small stock, your choice may not be obtainable. Powder and shot can everywhere be purchased and if you have an intelligent idea of the powder and shot loads, you can easily load up your empties in a spare hour or two. A box of primers, re- and de-capper and a pocket crimper should be carried in your tool pocket when shooting out of town, and with these tools at hand it is no trick at all to load your empty shells. The sportsman is a man with ideas and while shells may be conveniently purchased in the different loads, the "old hand" is seldom satisfied unless he does the whole thing himself; and no one can deny that there is a great deal of pleasure in doing things with our own hands, and loading shells is at once an interesting and instructive pastime. Different gauges and bores demand varying loads of powder and shot, and a little experimenting along certain lines is often productive of much practical benefit. For every gauge there is a so-called standard load, which may or may not prove effective in your particular case. This is where the gun crank gets in his fine work, and by slightly increasing or decreasing the powder or shot load, or by changing the wadding, the balance of the load may be improved considerably, which naturally increases the effectiveness of your gun and lends additional pleasure to the sport. In loading shells for the shotgun the mistake of overloading is commonly made. This excessive use of a heavy powder load is quite unnecessary, as repeated experiments have pointed out. Beyond a certain charge, the excess in both powder and shot is a decided drawback. Every bore has its proper balanced load and while we can safely vary it to meet the demand for a slightly heavier or lighter charge, there is a point beyond which it is not wise to go, if we wish our guns to shoot at their best. The pattern of a gun is defined by counting the pellets a certain standard

charge will shoot into a thirty-inch circle at forty yards. The standard loads are as follows: Twelve gauge, 3 drams powder—1 or 1½ ounce No. 8 shot; sixteen gauge, 2½ drams powder—1 ounce shot; twenty gauge, 2 drams powder—¾ ounce shot No. 8. These are the standard loads using bulk smokeless powders, which are loaded the same as black powder. In factory loads the shells are usually wadded with a trap or field wad, two or three black-edge wads and a thin cardboard wad over the shot. This is a satisfactory load for general use, but I prefer one cardboard, one white felt, with black-edge wads to fill up. For best results the wadding should be selected of a proper thickness to leave about three-eighths of an inch for a tight crimp, and all wads should be seated with a firm pressure on the powder charge. In loading nitro powders, both dense and bulk, don't overload. Most of these powders burn with a considerable breech pressure and it is always wise to handle powerful explosives carefully. The recommended loads for the dense nitros, such as Walsrode, New Green for shotguns are: Twelve gauge, 30 grains; sixteen gauge, 26 grains; twenty gauge, 20 grains. Great care must be used when loading these powders, and the amateur should keep to a safe load and not exceed the above table given for the different gauges. Remember that while the bulk powders are measured and struck the same as black powder, all dense powders must be weighed on accurate scales. The points of greatest interest to the shooter are the spread and penetration of a certain charge of shot. From my own experiments on this subject I have found out that when using over three drams of powder I am overloading, but if using less than one ounce of shot I greatly weaken the load. This points to one fact, which is that while it is possible and sometimes desirable to lighten the powder load, any decrease of shot beyond one ounce makes the load less effective. I have tried 2½ drams of powder and 1½ ounces of shot on quail and grouse and the result was much better in a twelve bore Parker than the regulation—3 drams, 1 ounce No. 8—quail and partridge load. Not feeling quite satisfied that this small charge would work with equally good results upon larger and faster flying birds, I made up a light duck load using 2½ drams of powder and 1½ ounces shot No. 6. This load worked well but by decreasing the quantity of shot to one ounce and substituting No. 4 for No. 6 a better killing load was obtained. For geese and brant and long range shooting, 3 drams of powder and 1 ounce of No. 2 shot will give good results. The reasoning is this—in quail, woodcock and snipe shooting where a wide yet fairly regular pattern is of more importance than penetration,



the powder charge is decreased, but the shot charge increased. For duck and wild-fowling where penetration is of first importance, more powder and less but bigger shot will bring about the desired result. The question of wadding has been a much debated one, and a great deal that has been written, both pro and con, has no real practical worth. Years ago the cardboard wad was said to be used to prevent all grease from reaching the felt wad and injuring the powder, and it was then used solely for this purpose. In later years, manufacturers tell us that they use this cardboard wad to improve the shooting qualities of the shell. Then another fellow brings to light a theory that all wads must be from  $\frac{1}{4}$  to  $\frac{3}{8}$  of a size larger than the gauge of shell to be loaded. However true this may be in theory, if put into practice it would result in a badly bulged shell, which would jam and make trouble in the barrel. This only applies to paper shells, however, as larger wads must be used in loading brass shells, which cannot, of course, be crimped. A good wadding is the customary two pink-edge wads between powder and shot and the usual thin card (one-eighth inch thick) on top of the shot. A better combination is a pink-edge next the powder, then a  $\frac{3}{8}$  inch felt wad. This gives a good thick wadding with considerable elasticity and allows the shot to start slowly, gradually increasing its force until its highest velocity is reached, where it should be, at the muzzle of the gun. When using a light charge of shot, a good body of wadding develops the energy of the powder better, but when using over  $1\frac{1}{2}$  ounces of shot, less wadding will give more uniform results. The knack of loading a choke bore gun so that it will scatter the shot at close range is not, perhaps, generally known. The old method for this open load is to lessen the thickness of the wadding between the powder and shot, and to increase the wadding over the shot. While this method is satisfactory as far as it goes, a more effective system of loading was given out some years ago by Mr. Greener of shotgun fame. This method has given splendid patterns in a full choked duck gun, the latter arm being often used for quail and partridge. The idea is very simple and the "scatter" is fully as good as the open pattern obtained with the new fangled spreading devices. Here is Greener's method: A pink-edge wad is first seated on the powder, then a little powder is added, then a cardboard wad (one-eighth inch top wad) until two layers of powder and the same number of wads have been loaded. A pink-edge over the shot finishes the load. A full choked gun will shoot almost to a cylinder pattern by this method of loading and a still wider spread may be obtained by using larger shot, say four or five. If this load scatters too much to suit you, it may be modified by loading one pink-edge over the powder and two pink-edge wads over the shot. By using only one pink-edge over the shot a pattern closely approaching the modified choke bore is secured. The open pattern has not, of course, as good penetration as the regular choke load, but it has plenty of penetration up to 35 or 40 yards. For plover, snipe and swift flying shore birds, a  $2\frac{1}{2}$  dram load of powder and  $\frac{1}{2}$  ounce of No. 4 shot is a good load, having good penetration and a fair pattern. This small quantity of shot will not tear or smash these small delicate birds in the least, while the ample amount of powder warrants a close even

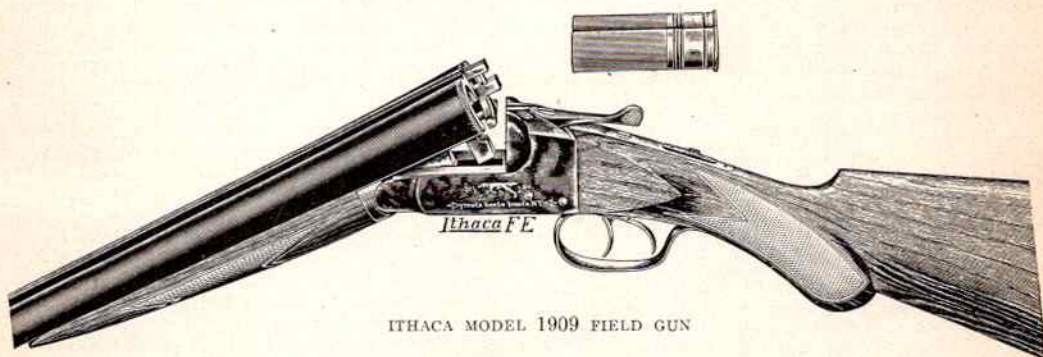
pattern with the necessary velocity. The size of the powder grains has an influence upon the pattern. Those powders having a small grain give an increased velocity over the large grained powders, and also give a somewhat more open pattern. The probable cause of this difference, no doubt, is due to the fact that the finer grains burn more rapidly, and in this quick combustion all the powder energy is consumed before the shot has been forced the entire length of the barrel. With the coarser grain powders, combustion is slower and this less rapid burning allows the shot to gradually increase its velocity up to the muzzle. The sharp pointed powder grains burn more freely and rapidly, while the rounder grains are of slower combustion. Experiments by an eminent authority show that an increased muzzle velocity is attained by increasing, not the quantity of shot, but the size. With three drams of powder and  $1\frac{1}{2}$  ounces of No. 6 shot, the average velocity was 790.171 feet; with No. 4 shot 840.527 feet, and with No. 1 shot 875.463 feet per second. It is the opinion of nearly all gun experts that more than  $3\frac{1}{2}$  drams of powder cannot be properly consumed in a twelve gauge barrel of ordinary length, hence it would be useless to expect good and uniform results by using a powder charge in excess of this amount. Next to the importance of using the correct wadding, the size and quantity of shot is to be considered. The reason why No. 8 and No. 9 shot is generally used for snipe and quail, is because a close pattern is needed to prevent the bird from flying between the pellets of shot. The only drawback to No. 8 and all shot smaller than No. 6, is the wounding of many birds that must invariably get away. With larger size shot (No. 4 or 5) the bird is more often cleanly killed, and the wounding of uncaptured game is lessened. It is not difficult to see that the small sizes of shot, by reason of their lightness, glance or rebound from the elastic body of a bird much more readily than larger and heavier shot. The common notion that small shot penetrates the feathers of a bird more freely than the larger pellets, is not correct. In fact, the power of small shot to overcome this resistance is not so good as that of larger sizes and you will always find that large shot has a decided advantage in penetration, even when using the same powder charge.

To handle the shotgun easily and well is naturally the greatest desire of the reader, and that this happy facility may be attained with a reasonable amount of practice, it is highly important for the novice to begin at the beginning. To begin right is half the art of shooting and if one wants to become proficient, it is necessary to begin correctly. Some of the simplest things are really of the most importance, and if these are mastered at the start, improvement in skill will quickly follow and the development, while gradual, will be as rapid as any but the most impatient amateur can desire. To accumulate bad habits at the start, is only to handicap the beginner indefinitely, for it is much harder to give up bad habits and alter the style in these small matters, than to begin all over again. As in every other sport, so it is in shooting, that some of the most important details are at the first glance apparently of small account, and for this very reason are likely to be overlooked. Shooting is not child's play and you may take my word for it, that even the "top notch expert" had to learn them first and



must observe them as well as the greenest beginner. First of all it is necessary to hold the gun correctly and while the exact position which the left or free hand should grasp the fore-end or barrel may be left to the shooter to decide, the novice should never "hold" less than a good twelve inches ahead of the trigger guard. A well extended arm gives a more perfect command in throwing up and aiming the gun, and moreover, it gives free play to all the muscles of the arms. If you were to ask any good shot with the "smooth bore" to give in a few words his secret of the art of hitting, he would very likely reply—"Hold correctly, with a firm pressure at both shoulder and fore-end, and shoot by compressing the whole hand." This is in fact, the gist of the whole matter, and if it is faithfully carried out, future practice will certainly show a marked and rapid improvement. The trigger should never be pulled, the act of firing being accomplished—not with the trigger finger alone—but by squeezing the stock with the whole hand. A visit to the "traps" where experts congregate will show what "good form" in shooting means, and such a visit will teach more than a ream of descriptive text. As visiting sportsmen are welcome at the school of almost all gun clubs, the non-member should avail himself of these occasions and an observing chap

proximates forty miles an hour, and this calculation is probably more or less correct. The different varieties of game-birds may be roughly divided into field and shore birds, and wild fowl. Among the first class may be mentioned: rail, quail, woodcock, partridge, etc., while the latter include the larger feathered tribe, as, duck, goose and brant. The flight of the quail may be taken as the average speed of field game, and the duck that of the wild-fowl. In quail this class of shooting, which is generally termed field or cover shooting, the bird is generally shot at comparatively short range—often at twenty or twenty-five yards—and seldom at longer range than thirty yards. At these distances with the average field load, a "lead" of two feet will be found about right for ordinary conditions, and the allowance which should be given to hit the game with the center of the charge. Wild-fowl are larger bodied and much swifter in their flight and more allowance must be given for this class of shooting. One writer has estimated that ducks frequently fly at the rate of sixty miles an hour, and any sportsman who has tried his hand at wild fowling knows by experience that this rate is not greatly exaggerated. As wild-fowl shooting is usually best on the coast, the "flight" is often accompanied with more or less wind, and when the swiftly flying



ITHACA MODEL 1909 FIELD GUN

cannot fail to see and hear much that he can apply to his own especial benefit. In taking up the actual shooting of the gun in the field, all theories and experiments should be set aside, as practical results must henceforth count. Shooting at a stationary mark and at a flying bird are two different propositions, and to aim direct at swiftly flying game and expect a "kill" is to court probable failure. Indeed, there are several things to consider if one expects to learn the shotgun game, and while any considerable success can only be expected after some little experience has been gained in the field, the points enumerated may serve to start the beginner on the right road.

In shooting at a flying bird allowance must, of course, be made for the swiftness of flight and the distance from the shooter to the game, or in another turn of words, the gunner must calculate the speed of the flying game as well as the probable time it will take for the shot to reach its intended mark. This question of speed and distance varies somewhat according to the kind of game, and in wild-fowling another factor, the wind, has often to be taken into consideration. It has been estimated that the average speed of a bird on the wing ap-

proximates forty miles an hour, and this calculation is probably more or less correct. The different varieties of game-birds may be roughly divided into field and shore birds, and wild fowl. Among the first class may be mentioned: rail, quail, woodcock, partridge, etc., while the latter include the larger feathered tribe, as, duck, goose and brant. The flight of the quail may be taken as the average speed of field game, and the duck that of the wild-fowl. In quail this class of shooting, which is generally termed field or cover shooting, the bird is generally shot at comparatively short range—often at twenty or twenty-five yards—and seldom at longer range than thirty yards. At these distances with the average field load, a "lead" of two feet will be found about right for ordinary conditions, and the allowance which should be given to hit the game with the center of the charge. Wild-fowl are larger bodied and much swifter in their flight and more allowance must be given for this class of shooting. One writer has estimated that ducks frequently fly at the rate of sixty miles an hour, and any sportsman who has tried his hand at wild fowling knows by experience that this rate is not greatly exaggerated. As wild-fowl shooting is usually best on the coast, the "flight" is often accompanied with more or less wind, and when the swiftly flying



of rise cannot be seen. Needless to say, shots of this character are difficult to execute and to be on the safe side the novice should give a goodly amount of "lead." In the falling approach we have yet another shot that is frequently met with in the course of a day's sport afield, and like the direct approach it is one of the easiest for the beginner to make. As the name implies, the flight of the bird is a downward sweep towards the shooter, which is not at all difficult to gauge if the shooter will but remember the advice on "lead" already given. As in the rising shot, the gun should first sight or get a line on the bird, and then swing ahead in the direction of its flight, which in this particular shot will be down and under the game. Two or three feet of "lead" should be given, the amount depending upon the range of the shot. If the game should approach the gunner at an angle, some little difficulty may be encountered before the amateur will feel certain about his aim, but a little shooting experience will give the requisite confidence. In shots of this class which includes all quartering shots—both left and right—little, if any lead need be given, the sight being directly at the bird. As far as my shotgun experience goes, the only exception to this rule is when the bird flies at an angle across the right of the gun, in which case the shooter should make a little allowance for the speed of the bird. A left-handed man will, however, find no difficulty in making this shot (his hard ones being from right to left) as his best gun play lies in this direction. When the game has passed the gun and is rapidly "beating" it for the next county, all that is possible for the gunner to do is to sight the bird and shoot as quickly as he can pull the trigger. Quickness is here the real requirement and the bead must be quickly drawn without hesitation or the bird will be out of range. With the game flying well overhead, real trouble may be expected as the high or "sky-scraper" is, perhaps, the most difficult of all shots to successfully execute. The chief difficulty in pulling off this shot lies in the very awkward position which the gunner must assume in getting the gun up to the shoulder and in drawing an accurate bead. This shot is one common to the wild-fowler and can only be done with certainty when in a standing position. In the case of a bird rising at some distance from the gun, the safest rule is to give a generous allowance, for it must be remembered that all rising birds are not only ascending quickly, but are as rapidly getting out of range. The gunner must think rapidly and act quickly and give too much rather than too little lead. With a descending bird the shooter has more time to calculate the range, and when shooting over decoys the game should be followed with the sight until about a yard over the water, then shoot without stopping the even swing of the gun. A good rule to remember and which should always be applied, is to shoot deliberately at approaching game, but aim quickly and shoot without delay at a passing bird. In all crossing shots, that is when the bird is crossing or flying before the shooter, a good "lead" should be given. A rising and crossing bird is handled in the same manner as rising shot, but in this instance both the rise as well as necessary lead must be considered. A descending cross shot is naturally just the reverse, and the "lead" and the drop of the game must be allowed for. In shooting, it is important to first cover the bird with the sight, then

swing ahead the required distance and shoot without stopping the smooth even swing of the gun.

In bringing to a close these remarks on gun handling, a few words of advice may not be out of place.

Don't shoot at a bird hopelessly out of range. If it has passed by you, count it a "lost chance."

Don't forget to allow a generous amount for the speed of the bird and don't forget that shot falls off considerably at long ranges.

Don't pull the gun about by the muzzle. Don't climb fences with a loaded gun, put the gun over or under first, then climb over yourself.

Don't take a loaded gun in a boat or canoe, there is plenty of time for loading after you get aboard.

Don't be a "pot shot;" give the bird a square deal and make it a rule to only shoot on the wing.

Don't be a hog, be satisfied with a reasonable bag.

Don't "tank up" for a day's shooting. A boozy gunner is a dangerous man to have around.

Don't shoot at a companion's bird, attend to your own side of the fence. And last but by no means least, don't fool with a gun, point it at anything you do not desire to kill, and never put it away loaded.

A good shotgun is a thoroughly reliable and dependable weapon, but like all tools, the best results can only be expected when the mechanism is in the best condition. The importance of good care is so obvious that it should be unnecessary to dwell upon the advice for the shooter to always keep his gun in the pink of condition, and this applies to both inside and outside, barrel, lock and stock. It is no mystery or "knack" to keep a gun in perfect order, all that is required is a systematic and thorough cleaning and oiling after use. Neither is it hard labor as many seem to believe, although I must acknowledge that some mis-directed shooters make no end of a fuss in their endeavors to clean up their weapons. Squirting dirty water down a gun barrel isn't cleaning, not by a long shot, and the quicker this sloppy method is discarded the better it will be for the gun—and yourself. The common practice of swabbing out the barrel with hot or cold water is not to be recommended, as the action of water on the deposit left by smokeless powders only serves to harden the residue. The hot-water treatment may be all right for black powder users, but the twentieth-century sportsmen prefer to use the cleaner nitro powders and the old-fashioned method of cleaning should be tabooed, and put on the shelf alongside the ramrod and the powder horn. It is gun wisdom to always clean your gun after a day's shooting, and the careful amateur should make it an inflexible rule to never leave the cleaning for the next morning. The quicker fire-arms are cleaned after using the better, and if cleaned before the powder deposit has hardened the shooter will save much future trouble. In cleaning the barrels, never rest the muzzle against the floor or any other hard unyielding surface. If a rest is required, use a piece of old carpet or sackcloth rolled into a bundle. Clean from the breech end only, as any slight dent or burr at the muzzle will greatly impair the shooting quality of any fire-arm. Never use a steel wire brush in a shotgun, as it will most certainly scratch the polished inside surface of the barrel, injure the accuracy and greatly encourage rusting and pitting of the barrel. A soft brass



cleaner is the only cleaning implement suitable for this purpose, and there are several different kinds on the market, which if used as they are intended to be used, will clean without the least injury. The Marble, Tomlinson and Stevens gun cleaners are perfectly satisfactory tools. These implements come in all gauge sizes, are made from soft brass and are threaded with an universal screw which will fit any cleaning rod. The Tomlinson cleaner is a perfect tool, consisting of gauze pads fitted on each side of a center core. These pads of soft woven brass are detachable, and when worn out may be replaced for a trifling amount. The Stevens cleaner is another popular implement, intended to be used with brass cloth and cotton patches, the latter being employed for all ordinary cleaning and oiling, and the brass patch for removing any stubborn deposit of lead not readily removed by the friction of the cotton patch. Extra patches may be purchased at any time. The Marble cleaner is a cleaner and a three-jointed rod combined, the cleaning pad being made of brass gauze washers fitted over a brass holder. This pad may be compressed to fit the taper and gauge of any barrel, by simply pressing a lever on the handle of the rod, which feature enables the user to firmly press the pad

scrubbing will likely be to injure the surface of the barrel and deposit upon the polished steel a coating of brass, which will bring about a chemical action between the two metals. The use of Marble's Nitro-Solvent oil may be freely used for cleaning and oiling, without the least danger of injury, and while I have no object in advertising their product (having no ax to grind) it is too good an article to pass by unmentioned. When putting away a gun, the barrels should be stopped at the breech and muzzle ends with tightly fitting corks or gun ropes, which have been soaked with any good mineral oil. Slip covers of chamois should be provided as an extra protection for stock and barrel, or if one is economically inclined, have your wife or sister make the covers out of any stout woolen material. While I should advise the inexperienced handler of fire-arms not to monkey with the locks of his gun, it is sometimes desirable and necessary to take down the action for repairing or for cleaning. As the mechanism of modern guns consists of but a few parts no difficulty should be encountered, providing the sportsman does not commit the error of taking out all the screws at once. Go at the matter carefully, and note how the several parts are fitted, and you will have no trouble in putting



THE FOX GUN

against the inside surface of the barrel, greatly assisting in removing all deposits of lead and dirt. When the lever is released, the pad may be withdrawn without the possibility of getting stuck in the barrel. For deposits of lead or rust, the brass pad is used, while for ordinary cleaning and oiling a piece of cotton cloth makes an ideal implement. In using any kind of gun cleaner, it should be covered with at least one thickness of cotton cloth which has been well oiled. Take particular care to touch every portion of the barrel with the oiled cloth. This may be easily done if the cleaner is slowly revolved at the same time it is being pushed from the breech towards the muzzle of the barrel. Do this a second time, using another oiled patch and even a third may be necessary to properly clean a badly fouled barrel. A clean patch should follow in every case, completing the job by oiling with a swab saturated with some good oil. When it is necessary to use the bare brass gauze to remove a deposit of lead, this should be carefully done by revolving the brush over the offending parts only. Don't make the mistake of forcibly moving the brush up and down the entire length of the barrel. This is altogether unnecessary and such a violent

them together in their proper places. To take down a breech loading shotgun, first remove the fore-end and barrels. Then take a screw driver of suitable size and turn out the "side pins" and remove the trigger guard. Having removed the guard you will notice another pin in the rear of the trigger plate, which should be unscrewed. In some guns this screw, or "hand pin" as it is technically termed, will be found in the tang on the top of the grip. The "furniture pins" which fastens the forward end of the trigger plate to the breech action, should next be partly unscrewed. This accomplished, remove the "breech pin" which will be found on the top of the tang of the break off. This screw or pin is covered by the top lever, which should be held to one side while the breech pin is unscrewed. The "furniture pins" are now removed and the trigger plate and the triggers may be entirely removed. To assemble the gun, proceed as above, the order being, of course, reversed; the trigger plate and triggers being first assembled, followed by the breech pin, furniture pins, hand pins, side pins, trigger guard, and lastly the fore-end and barrels.

[THE END]



# WANTED—A .22 AUTOMATIC PISTOL

## SOME REFLECTIONS

**I**F evidence of the profound interest shown by Americans in the development and improvement of fire-arms were needed, it would only be necessary to publish the daily mail received by the Outer's Book since the suggestion for the .22 caliber automatic pistol was first published. Responses have come from every state in the Union and from the most remote corners of the Republic. These letters are mainly from intelligent, serious thinking men who are actuated only by an earnest and patriotic desire to improve and perfect our home productions and keep American arms and ammunition at the head of the procession. The idea of a perfectly balanced and faultlessly working .22 caliber automatic pistol adapted to snap shooting, to target work and general all round practice, is extremely alluring and meets at once with prompt endorsement by everyone who has reveled in the pleasure afforded by the similar use of repeating and automatic types of the .22 caliber rifle. From time immemorial, to be expert in the use of the pistol has been accounted one of the principal accomplishments of a gentleman, and it was in furtherance of this well established sentiment that the single shot pistol reached its most perfect stage of development. Those of us who have seen and handled the exquisite pistols, veritable works of art, made by past masters of the armorers' craft, will forever retain a conception of fit, balance and beauty that will serve as a standard in our minds after which we may hope to see our modern arms modeled as closely as the radical changes of type will permit. The original single-shot pistols of foreign as well as American make were mostly hand made and therefore showed unmistakably the individuality of the armorer, or if made to order, that of the purchaser. In this way there was often a marked difference in the detail and finish of pistols that were alike in principle; yet it was to this free exercise of individual ideas that the craft of the gunmaker owes many of its most pleasing and permanent features of outline and detail. The invention of the revolver while introducing the hitherto unknown element of repeating and rapid fire into the sporting game was well nigh fatal to the armorers' industry of the world. So important was the advantage of repeating fire considered that almost everything in the way of what was then considered standards of high class pistol construction was sacrificed to the new idea. It is worthy of note that the first move of importance toward improvement in the revolver was to try and increase the speed of fire by double action lock work, a very ingenious contrivance but much over rated, and in the opinion of most practical pistol shots wholly failing in the object for which it was designed. Various schemes, and some really meritorious mechanical devices were adopted from time to time, especially by military men, to increase the fire speed

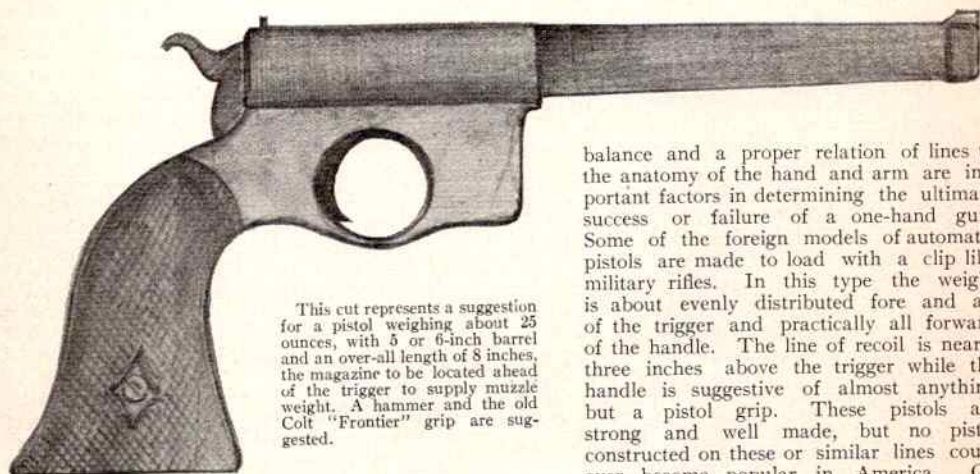
of the revolving six shooter. Experts and outlaws who prided themselves on their skill in rapid manipulation, exhausted their mental and physical resources trying to increase their speed, to the smallest fraction of a second. Speed of fire with the revolver was practically reached with the first type put out by the original manufacturer. Fixed ammunition added nothing to its speed of fire until after the first six shots were fired; the double action system proved a failure as a speed factor when accuracy was expected in connection with its use. The clip system of reloading never became popular when used with weapons of the revolver type. The men who were real masters of the art of rapid fire and manipulation were comparatively few. They acquired their marvelous skill through personal effort and their art died with them. To acquire extraordinary speed of fire with the revolver with even a fair degree of accuracy requires a certain amount of adaptability on the part of the individual and untiring practice. That the pleasure derived from such practice and the pride of accomplishment more than repays one for the effort, goes without saying, but the time required to become an expert often makes sad inroads on one's business hours or the time that rightfully belongs to one's family. With this in mind we would gladly welcome any type of arm that will do most of the work itself. Such an arm is the automatic pistol. No one will pretend to say that it is a perfect weapon for any purpose. The most perfect type with which we are familiar is unpardonably lacking in many of those excellent qualities which were characteristic of our beautiful hand made pistols, and which has endeared the revolver to us all; but notwithstanding this, the auto pistol will live. The same reasons which gave us the revolver, the gattling gun, the repeating rifle, the machine gun, and other rapid fire arms gave us our first crude types of the auto pistol. I believe that one of our most noticeable characteristics as a people is our love of machinery. It is said of the Yankee that "He'll make the machine and the machine that makes it." This is literally true. Another noticeable national trait is our craze for speed in everything. Perhaps these two traits selected at random will explain in a measure the demand for automatic arms in America.

In submitting the accompanying cut to the gun lovers who are interested in the proposed new arm, it is not with the idea of having it adopted as the standard, but only to show that it is not impossible to produce an automatic pistol, and at the same time retain some of the distinctively American features which have come to us, time proved, and endorsed by experts. The diminutive proportions of the .22 caliber cartridge intended for use in the proposed pistol renders it possible to produce a mechanism of any desirable shape and proportions.



Mechanical engineers whom I have consulted claim that there is no insurmountable difficulty in the way of adapting the several systems already on the market to the Winchester .22 caliber automatic cartridge. There are upwards of a dozen different types of automatic arms now in existence, and it will be strange if some of these manufacturers do not make an attempt to occupy the field already gratuitously opened for them. Some of the existing models are ponderous in proportion to the size of the cartridge, others are complicated, some do not function properly and others are not built on the proper lines to use, as every pistol should be, that is, intuitively. Most American

of their weight located to the rear of the trigger. When to this is added the weight of the magazine and its load, one might as easily try to take aim with a cast iron round shot. One of the strongest arguments advanced by opponents of the automatic pistol is the indisputable fact, that they are not the chosen arm of expert pistol shots. And why are they not? Simply because they haven't the balance and muzzle weight necessary to impart that sense of steadiness so essential to good holding, and which is so characteristic of the high grade revolver. Tests have shown that the automatic pistol is fully equal to the revolver in point of accuracy. We must therefore conclude that fit,



This cut represents a suggestion for a pistol weighing about 25 ounces, with 5 or 6-inch barrel and an over-all length of 8 inches, the magazine to be located ahead of the trigger to supply muzzle weight. A hammer and the old Colt "Frontier" grip are suggested.

revolvers are built with the grip at a correct angle in its relation to the barrel. The single action coat is a notable example of this in the revolver family and the Luger among the automatics. With either of these arms good direction shooting may be done without the use of sights. On many of the automatic types the handle is set too near at a right angle to the barrel, so that when shooting unless when corrected by the sights, the muzzle is depressed and the shots go low. Some of the auto pistols with which we are familiar have most

balance and a proper relation of lines to the anatomy of the hand and arm are important factors in determining the ultimate success or failure of a one-hand gun. Some of the foreign models of automatic pistols are made to load with a clip like military rifles. In this type the weight is about evenly distributed fore and aft of the trigger and practically all forward of the handle. The line of recoil is nearly three inches above the trigger while the handle is suggestive of almost anything but a pistol grip. These pistols are strong and well made, but no pistol constructed on these or similar lines could ever become popular in America. On

nearly every one of the auto pistols now in use, there is some feature that is worthy of incorporation in our proposed model, but if we build wisely we will adhere as closely as possible to the general lines of the American revolver, adopting such features of the auto-loading pistol as will make for speed of fire and increased effectiveness where the revolver has reached its natural limitations.

We would be glad to have our gun loving friends tell us what they think of the above suggestion for the .22 automatic pistol.

## OLD TIME TRAP SHOOTING

By "ALMO"

**M**Y first experience at the traps was in 1853. I was then a big, over-grown boy. The family was invited to spend a month at Gunton Castle, Norfolk, England. Imagine my astonishment, as a boy, at the large party detailed to escort us to the grounds. The castle contained over three hundred rooms for guests. I met many boys from the college I had just left. Our attention was called next morning to the

report of guns. We found a set of live pigeon traps—Guyon traps—and rifle ranges of 1,000, 500 and 200 yards. It was not long before we discovered that orders had been given by His Lordship to instruct the boys in whatever sport they wished. George, an old, pensioned game keeper, was to give instructions and see to our safety. We were shown the gun room and told to select our guns. They were taken to the



Guyon traps that threw a tin target. Boys who were known to have handled a gun—I was one—were allowed to shoot, with a man to load our guns at the score, and another to trap. My call came. George said "Ready! Pull." Then I heard George say "port." I held well in lead and the tin target was reported, with four shot marks. "Good, sir, try another," said George. This time he called "starboard." I led again, and the report was six shot marks. Then I left the score. Studying over what George meant by "port" and "starboard," my yachting experience came to my aid. I asked George if he had once been a sailor. "For twenty odd years, sir," he said. As a party of men came to the live pigeon traps, I ran to see blue rocks right from the lofts. They left the traps in a way I have never seen since. Experts from Hurlingham and London gun clubs missed when I thought I could have hit. Very soon George came and took his place. A pigeon was trapped from a center trap, and I heard George say "port." A kill was the result. I found George was a very old servant with many privileges. His way of coaching must be observed. His age, over ninety, was his liberty to do as he wanted and a reason for a very liberal pension.

Very soon I found that some of the guests were trying new guns. George examined every dead pigeon for shot marks, and his say-so decided a gun's fate. "A killer, sir," meant a gun to be kept. As these guns were of the best London make, it was a life lesson to me. Not all guns are killers, even if tailor made. Many were rejected. When the shoot was over, some ladies began rifle shooting at 200 yards. George went to their assistance. I noticed a lady make a three o'clock. George touched his cap. "Port, lady," he said. "Thank you, sir," she replied, "I did not notice a change of wind. I held but one ring to nine o'clock."

George was now a friend of mine. I was shown guns used by noted hunters, Lord Gunton's rifles, with which he had killed tigers, and pinfire breech loaders from Paris. In four days I was killing live pigeons with the experts, and had received an invitation from his lordship to shoot driven pheasants on the opening day of the shoot. A short time after, my uncle introduced me to the gun club. I filled his place so creditably that

he gave me his new gun, a pinfire made in France. From George's lessons I found my gun required more wads and shot to make it equal my father's Westley Richards and Joe Manton muzzle loader, and I loaded my shells accordingly. When center fire guns came into use, my pinfire was converted by a local gunsmith, and very few guns equal it in dead kills at the gun clubs. I crossed the Atlantic with a Pope choke bore, a present from my aunt. In New York I met their best man, and at Hoboken, I took his hundred dollars in gold. We used H. & I. traps, and what guns! A handful of shot poured into a muzzle loader of over ten pounds weight! Wild pigeons with long tails were thrown up. I led by four pigeons in a twenty-five bird match. At Albany I met a Mr. Scott, and won four 50-bird matches. I lost one by letting him use my gun. Out west there was so much game, that I paid no attention to the trap until the Bogardus glass balls struck me. With the first mail an order went to New York for some of them. The next steamer landed traps and balls. We smashed them until notified to stop, on the ground that the broken glass was dangerous to the bathers' feet. Outside the city limits we enjoyed many a pleasant evening.

I next made a trip to every county seat in Texas, carrying a trap, balls and gun. It was an advertising trip for my own store, and also the old Baker gun. On this trip I had occasion many times, to remember George's "port" and "starboard" instructions. It was interesting to note that crack pistol shots of Texas failed to break glass balls with a big 10 gauge, ten-pound gun. During the big gun craze I never found a reason for laying down my 12 gauge Hurlingham gun. It handled 1½ ounces of shot to the very best advantage. I never found any great pleasure in breaking the old clay pigeon. There was so much complaint of having hit, without scoring a break. The trouble was with the poor guns. These same guns I found wounded more ducks than they killed. They were regular stringers of shot. I found that they would smoke blue rocks, but not break them. In testing guns for my friends, I used this as a guide for several years, and the old man's advice is "Don't take a gun out for ducks that will smoke blue rocks." I am now old and feeble, but my long life of perfect health I attribute to outdoor exercise with congenial friends at the trap and in the field.

## A CALL FOR IMPROVEMENT IN AMERICAN RIFLES

By W. M. PUGH

**M**OST of the rifles turned out from first class armories in the United States today, shoot well. Despite this fact, the cranks demand something better, and they want it soon. This statement is justified by each recurring monthly

issue of the prominent magazines, covering the gun and ammunition field; pages being devoted now to voice this mighty roar; whereas a low growl, condensed in a few lines, was formerly heard. Those pioneer articles regarding the bolt

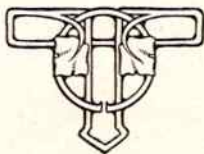


action, by Mr. Crossman, are likely responsible for the movement, or rather its publicity in print. Gun gossip in the stores and around the camp fire, awhile back, included this subject in the discussions according to a prominent place, though the identity of the individual who threw the first brick may ever remain concealed. The problem is quite sizeable, particularly from the standpoint of the manufacturers, with their present large amount of capital locked up in machinery and stock not marketed. No radical departure from present types need be expected to originate with the factories, and the proposition to receive any attention whatever from outside capital, looking to the creation of a new plant in the United States to manufacture and market a rifle; should include in its terms the vitally important factor—the model desired by the kickers. How to get out the vote and arrive at a conclusive estimate of who's who, and what's wanted, is an undertaking of no small dimensions. As part of a beginning along this line several of the fraternity, whose pet weapon is the grooved barrel, have been interviewed, with the understanding that their opinions would be incorporated in this article without exposing their identity. They are as a unit in objecting to the rough finish seen in the barrel interiors and actions of the home product. They further believe, that the desired type should be constructed with marked improvement as to certainty and speed of feed. There must be no jams, or sticking of spent cases, in the improved model, while it is kept in a clean lubricated condition. Keeping these objections in sight, they have suggested two principal types for consideration. One represents a modified form of the 1903 United States Springfield; that is, a sporting model of this fine bolt action rifle, having a shotgun butt stock, in place of the one now attached of clumsy, musket design. They further suggest as part of this revamping, that the action needs attention; a general smoothing up in its working parts, with elimination entirely of the creepy trigger pull. At the same time the equable calibration and fine finish of barrel bore, seen in rifles made abroad, should receive the best attention in this reconstructed model, thus insuring a minimum of metal fouling, with a maximum development of the accuracy and power of the cartridge. A general heftiness and symmetry, should show in this remodeled weapon, the weight of which should not much exceed 7½ pounds. The matter of sights, swivels and sling straps, needs little thought at this time. As to selling price, a plain finished piece, well made and free from ornament, should retail for, say, \$25.00 flat, and at that price from the hands of a maker of known standing, should sell freely. A first class automatic rifle is in demand by many sportsmen. These seem to

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incline to a type not greatly differing as to action, seen to advantage in the Luger pistol—the toggle joint movement, with a rigid barrel. In fact, the Luger idea would show up best in a rifle, it having in common with all automatic pistols, the defect of requiring two hands to bring it into action, unless carried cocked with safety set. This objectionable feature need receive little if any weight in a rifle model, which, with its extra weight, may be readily cocked. The Luger functions fast, without jams, and there seems no reason why the question of construction of a rifle after this design, would not receive attention from the agent, Mr. Tauscher, to be referred by him to the Luger people abroad. While their favorable attention would mean the introduction here of another arm of foreign make, American manufacturers could with reason offer no objection if they themselves remain laggards in the matter of improving the rifle to meet the desires of our sportsmen.

Just a few words about caliber of the future rifle: Experience teaches that many of the cartridges made at present have little real reason for their birth and being. Cartridge option that would have latitude to comply with actual necessities, need not comprise over three sizes, viz: .22 L. R., .30 U. S. and .405 Winchester. It is doubtful if this caliber confusion benefits any one, least of all the gun and ammunition people, who seem for the most part its sponsors. Cartridges would be much cheaper if the makers could eliminate about 95 per cent of the many odd sizes they now make up and carry in small lots for weapons that should long ago have been scrapped. Take, for instance, the .45-70-500 cartridge; it is doubtful if any well informed man would buy a rifle for this cartridge in the light of what is known regarding much better loads, having equal shocking power with advantages that should have ruled off this bore long ago. Again, why this demand is heard for such extremely powerful loads by sportsmen, is indeed a puzzle. Consider in the time of Boone and Kenton, the woods, plains and mountains of our country were inhabited by a horde of wild animals and bad men; the last word was the rifle, which judged by census returns, surely made good, yet the powder then made was poor and the caliber of the barrels carried rather small. It is questionable if the best rifle of that time was as effective, or nearly so, in range, accuracy and shocking power, as for instance the Stevens Ideal .32, and now with the dangers afield about wiped out, the long yell re-echoes for a more powerful cartridge. The sane logic of this whole question is that the U. S. Springfield 30 rifle and load, with the correct Mr. Right handling it, is more than a match for anything that roams, flies or swims within our boundaries.





# ANSWERS TO CORRESPONDENTS

## THE POCKET GUN

EDITOR GUN DEPARTMENT: By the pocket gun I mean all manner of revolvers, derringers, and automatic pistols. To read the "Arms and Ammunition Departments" in the various sporting journals one would think that the world had gone revolver mad. One noted writer and sportsman has spread gallons of ink and consumed yards of printed space in an endeavor to get certain manufacturers to build and place on the market a new model revolver that he had designed and that embodied certain new (?) features that would enable one to more quickly draw and fire the gun at an adversary. In other words the object to be attained was to enable men to kill each other with more certainty and despatch! For heaven's sake, what are we anyway? A race of savages? Of Cannibals? Now, my whole family have ever been devotees of hunting and shooting and most of us have been, and are still, what you might call revolver enthusiasts. I have a brand new Smith & Wesson target revolver in 32-20 size with a 6-inch barrel, swing-out cylinder and wood handle. The trigger pull and the chambers are absolutely perfect and with a 3-grain charge of Bullseye powder and a 1-10 sofer bullet it shoots like a Winchester rifle. With this combination I can usually place about 80 per cent of the shots on an 8-inch bullseye at 50 yards. This seems like pretty good work, does it not? Well you might start me out after game with this outfit and the chances are that I would starve. Not one revolver shot in a thousand can hope to make any showing with his pet arm on game. The revolver is emphatically not a game getting gun. It is made to kill men with. Nothing else. True, they do occasionally forget their mission and kill a few innocent women and children. I think I would be perfectly safe in saying that more people had been accidentally shot with revolvers than with both shotguns and rifles. I also think it would be safe to say that where one burglar has been shot or shot at that ten members of men's families and innocent neighbors have been killed. More broken hearts and ruined lives have been caused by these things than by every other device ever contrived by inventive man. Not one man in a thousand who, having used one of these arms with telling effect—in other words killed his man—but would give his right arm if the thing had only snapped instead! Now I love to take this revolver of mine out of the drawer at times and "fondle" it. I also delight to stand off and pepper away at a target with it. But had I the remotest idea that it would ever at any time draw human blood I would cast it from me as though it were a thing infected with plague. No, I wouldn't sell it or give it away! I'd just carefully trip the cylinder out to make sure that it was not loaded, then I would take the axe and break all breakable parts and throw it off the end of the pier at Long Beach.

One of my brothers is now carrying a stiff knee-joint through life for no other reason than that he loved a revolver. 'Twas night, and a chicken snake had disturbed the hens in the barn. Just an ordinary old speckled chicken snake that one might safely pull out the nest by the tail and rap his head against a post, but Frank thought it was a case that called for armed intervention. As a sequel to the case the family were soon standing around with blanched faces while two doctors tried in vain to locate the bullet. They had no X-ray in those days, so the wound eventually healed with the bullet in it. Of course the rest of us disposed of our guns and solemnly pledged ourselves to buy no more, but in time we all had revolvers again, even the boy who had been shot. But to tell the God's honest truth, I feel safer in a house when I know no revolvers are around than when they are. And if I were to be held up by a robber I would much prefer to be unarmed, for then he would only get my money, which might be none at all; whereas were I armed with a revolver I would most likely be shot or knifed while attempting to draw it, for the hold-up man or burglar seldom gives anyone a chance to use a weapon if they had it. Now, as to the automatics, they are an abomination, fraught with the gravest danger to the novice who tries to learn them. A .22 caliber rifle club is altogether more safe and sane than a revolver or pistol club, and the expense entailed is not near so great. Still I must refrain from recommending these in thickly settled districts, for one never knows where the bullets will stop and one is not justifiable in taking chances where dear friends, relatives and neighbors lives are in the balance. The whole thing thus narrows down to the good old shotgun, the safest and most sensible deadly weapon on earth, and the only one to use in a thickly settled country when one is out after sport and after game. Now I think, after careful consideration, you will agree with me that I have let the pocket gun down very lightly and that I might have made this much stronger than I have. Thanks for your kind attention.

LEN. D. WHITEMORE.

## SHOOTING TO THE LEFT

EDITOR GUN DEPARTMENT: As a reader of the Outer's Book, I take the liberty of asking for a little information. I have a Remington auto shotgun which, so far as I can see, is sighted correctly, but in snap shooting it shoots a trifle to the left for me. Wherein is the stock a misfit? I have cut  $\frac{1}{8}$  of an inch off the stock, and I think that  $\frac{1}{4}$  or  $\frac{3}{8}$  of an inch would be better. Yours,

OSCAR J. FRYOR.

[There are several reasons why your shotgun might shoot to the left. As I understand it you shoot to the left only when snap shooting. In this



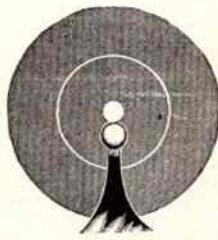
case it is possible that in your eagerness to locate your target you do not bring the comb of the stock up to your right cheek, which should always be done to enable you to direct your eye along the center of the barrel. The comb of the stock may be too thick which would also have a tendency to throw the line sight to the left of the center of the barrel. Possibly you are square jawed or full faced. (Most good shots are). In that case the effect would be the same. If the comb of your stock is too thick it can be worked down to the desired thickness, with a fine wood file; if too thin or low, it may be built up to the proper dimensions by using a Rowley cheek pad. I do not think shortening the stock is advisable as the standard length of the Remington auto will be found to fit the average man. I have seen experienced trap shooters miss frequently, by failure to bring the comb of the stock into proper position against the jaw, or by unconsciously raising the head while endeavoring to locate the flying target.—R. A. K.]

## A MATTER OF CHOICE

EDITOR GUN DEPARTMENT: Having read Lieut Whelen's article on rifle sights and their accuracy, I would like to give the readers of the Outer's Book my opinion of sighting with the Lyman and Marble sights. I lower my peep so the front bead, Sheard sight, will be exactly in the center of the bullseye



THE NEW WAY



THE OLD WAY

or the object aimed, and not under the bullseye or object, as so many riflemen do. I can shoot my first shot much quicker, and all my shots faster, and can bunch my shots much closer than I can by having the sights the old way. I send you a diagram to show the difference. Yours truly,

W. J. MALLOY.

[The position of the bead on the target while aiming is largely a matter of individual choice. I believe, however, that a great majority of the best shots try to hold the bead slightly below the bullseye while aiming. In attempting to hold square on one is liable to get lost in the black, and high shots, or misses over the target, will be the result.—R. A. K.]

## AUXILIARY BARRELS

EDITOR GUN DEPARTMENT: Will you kindly inform me where I can purchase an auxiliary rifle barrel to fit a shotgun? The kind I have in mind are from three to six inches long. I wish to load 45-70 rifle shells, if possible, with a load of small

shot for shooting blue jays in fruit trees. I have a large quantity of old Springfield shells and thought I might be able to utilize them in this way with the auxiliary barrel inserted in a 12 or 16 gauge shotgun. Do you think this combination would do the work? The Outer's Book is a bird and I enjoy every page. Respectfully,

W. L. PARKER.

[The Remington Company of Ilion, New York, formerly supplied auxiliary barrels of various lengths and calibers to sportsmen for use in their shot guns, but I cannot state positively whether they still do so or not. In any event I do not think it would pay you to invest in an auxiliary barrel for the purpose which you have mentioned. I would suggest that you purchase a second hand 45-70 Springfield carbine. They have been selling almost everywhere for two dollars a piece and under. Then get the barrel bored smooth, which will cost about a dollar more. This will give you a reliable small bore shotgun, an extremely hard shooter and one that will require but little care. It may also be used with a light charge of powder and round ball for ridding the farm of small, troublesome pests.—R. A. K.]

## THE ORIGINAL HOWLER

EDITOR GUN DEPARTMENT: I note some commotion on the question of the .22 caliber automatic pistol. You are probably aware that I am the original baby who cried for it, and I am anxious to see it come in. I have fired 100 shots today with a 32-20 S. & W., and it is rather expensive fun. Can't you get the Colts to make a .22 Winchester automatic pistol? Yours,

W. W. MACQUEEN.

## THE DROP OF THE BULLET

EDITOR GUN DEPARTMENT: I note in your September issue, Mr. Charles Newton takes me to task for a supposed error in giving the fall of a bullet in my article on "Selecting That Rifle." The only way I have to account for this splitting of hairs by the gentleman is the fact that being an experimenter rather than a practical shot; thinking of new cartridges and of ballistics in general by day and dreaming of them at night, he finds it impossible to read the article from the standpoint of the non-expert, for whom the article was written. The intent of the article was to keep away from erudite discussions of the fall of bullets, etc., but to point out as simply as possible and by homely illustrations why no rifle shoots "flat", for the information of the man who lacks time or inclination to make a study of rifles but still wants to make an intelligent selection of one.

It would be passing strange that after giving the correct fall of a bullet during the first two seconds of its flight—figures common to every falling object—I would then suppose that the bullet fell the first second at the uniform rate of four feet per second and at the end of this time, suddenly speeded up to the rate of forty-eight feet per second. Even the non-expert of my own class would hardly be accused of believing that a bullet went through any such gyrations. Admitting therefore that I



hardly believed the bullet got such a sudden move on as this, Mr. Newton will have to admit that I knew the correct figures as demonstrated by him, but that I had some reason from refraining from entering into any such discussion in an article written purposely for the man who does not give a tinker's dash whether a bullet falls four feet or four rods in a quarter of a second as long as he gets a rifle that will do the work for which he wants it. The figures used were of course merely to illustrate that a bullet falls from the instant it leaves the muzzle and there was no attempt at accuracy, for the reason that there was no occasion for it. The discussion was merely of the fallacy of attempting to get what most dealers claim to sell—a rifle that shoots flat for any distance. Just why Mr. Newton springs these *obvious figures* upon us is hard to see, unless it is to prove that he has them in his possession. There are a good many other figures in this same article—used for illustration—upon which Mr. Newton can hang an argument from the ballistic Sharp's standpoint—but which would not add to the force of the article were they worked out correctly to the tenth place—the article was not written from this standpoint. In view of the fact that I had just quoted the correct figures for bullets falling through the air—for the benefit of the man who wished to work out the exact fall in a certain length of time, the ordinary intelligent man will easily see that the figures following were merely for the purpose of illustration without the tiresome attempts at extreme accuracy and the rows of formidable "x's" from our physics days, with which Mr. Newton decorates his article. I might suggest to the gentleman that I also stated that the bullet from a 30-30 is fifteen inches high *half way* to the target at 300 yards, a statement all right for the purposes of illustration but nearly as inaccurate from the scientific standpoint as the statement that a bullet falls four feet in the first quarter second. Mr. Newton is correct of course but to avoid taking up space, demonstrating things that we know to be true and quoting figures that the man of average intelligence is familiar with, I merely suggest that he read such articles from a trifle more impersonal standpoint, remembering for the nonce that there be those who don't care about tiresome figures but who are interested in the general principle of a thing.

Another example of this craze for accuracy from a technical standpoint is his reference to my statement that "air resistance is negligible at short ranges, up to 300 yards." This is another case in which I had written from the standpoint of the man who is after results, while Mr. Newton sees from the standpoint of the ballistic expert. I had just prefaced this statement by about a column, explaining as to the effect of the air resistance on a bullet and emphasizing the fact that air resistance is a very large factor in the flight of a bullet so that I cannot be accused of misleading anyone by this statement as to the fact that at short range we do not have to consider this air trouble.

It might have been well for Mr. Newton to have read a little more carefully before supplying us with figures copied from the handbook furnished with the army rifle. I carefully stated that bullets traveling from 1500 to 2000 feet per second, have to face an increase in pressure not in direct ratio with their increase in diameter but according to the

increase in the squares of their diameters—this also for the benefit of the man looking for accurate figures upon the base conclusions. It does not require much intelligence—in spite of the necessity which Mr. Newton finds of quoting the exact figures—to understand that bullets traveling at high speed, i. e. close to the rifle, encounter more air resistance than do those traveling slower—further from the muzzle of the gun. The fact remains, however that for practical use, the resistance of the air may be overlooked in shooting at short range and that it enters into our considerations only when shooting at long ranges—when the air resistance to a square-point or ogival head bullet has cut down the velocity to a marked extent. This whole discussion of air resistance was for the purpose of showing that at long range the long thin bullet, carrying its weight in small cross-section is preferable to the bullet carrying the same weight with cross-section twice as large. This conclusion that we can overlook this point at short range is one in which practically every rifleman will agree—at least those able to forget the multitudinous figures or who have had actual experience in the field.

Mr. Newton is warning against the use of very light loads in a high power rifle, owing to the destructive effect of the fumes of the primer is worthy of note—although I had not experienced this difficulty in light loads in the Mannlicher, New Springfield or Savage—possibly for the reason that I used other and heavier loads after the light ones and thus carried out the residue referred to.

I would call Mr. Newton's careful attention to the article of Lieut. Townsend Whelen in the September issue of Outer's Book on American and foreign rifles—particularly to the sentence regarding the jamming of the Krag and New Springfield which Mr. Newton says occurs quite frequently in his hands. Lieut. Whelen says regarding this:

"I have of course in my profession unusual facilities for the observing of bolt action rifles, having been for the last eight years in the closest touch with thousands of men using these rifles daily. Mr. Newton says that he has had both the Krag and New Springfield jam when the cut-off was set for magazine fire. I can hardly understand this statement for I have never seen a jam with the Krag which was not due either to gross ignorance or carelessness." From which Mr. Newton can take his choice. Mr. Newton's attention is again directed to Lieut. Whelen's experience with lever action rifles, in view of the fact that he says he has never heard of a lever action jamming.

Mr. R. J. Kaufman has a letter replying to my article on the bolt action, which is full of good points. I of course recognize the weakness of the bolt action and agree with Mr. Kaufman that an action closed at the rear is by far the safest of all—providing the metal closing the gap is strong enough in case of a let go on some part of the action to prevent the gases or bolt from breaking out. The Savage is fine in this respect although lacking in others. All actions have some drawbacks of course and my intention in pointing out the strong points of the bolt was not by any means to give the impression that I regarded it as the finest action possible to turn out in the future.

I would remind Mr. Kaufman, however, that a New Springfield which jams, does so either through



some crudeness in its manufacture unavoidable in the large quantities made and the hurry in which they are produced, or through some careless or ignorance in its handling—as stated by Lieut. Whelen, who has handled a few bolt action rifles—and by the way, managed to win the Adjutant General's cup at Camp Perry recently with his skirmish of 99 ex 100, landing third in the Peter's cup match with another 99 skirmish. Evidently his Springfield did not jam. Possibly he knew how to handle the rifle.

Mr. Kaufman's military service is not entirely convincing to me as settling the unreliability of the New Springfield. I also belong to the militia, having just completed my tenth year in the service. I have charge of the indoor shooting of my company and do some of the coaching and instruction of new men on the outdoor range. My own experience has been that the mysterious jams and trouble with our fine new military arms are due primarily to the men handling them; after that to the condition in which the rifles are allowed to get at times through sand or dust not being wiped out at the end of a day's hike and lastly to certain crudities and roughnesses of their manufacture.

What Mr. Crossman has not learned about the tricks of the Springfield, by watching his own, those used by other men and by correspondence with other users, will in all probability not be ascertained by Mr. Kaufman—unless the gentleman uses his rifle oftener than once a week and has greater facilities for observation than the writer. I have come to the conclusion that when my rifle makes trouble for me—as it does once in a while like other rifles—the fault is my own. Experience has proven this. If a cartridge is allowed to go into the magazine with the bullet pressed hard against the front of the magazine well, often the spring will not have sufficient strength to force it up. Reason—careless loading on the part of someone. Take for instance the care necessary to load the magazine of the '95 Model Winchester. Is it not reasonable to suppose that a modicum might be devoted to the long suffering bolt gun and that absolute carelessness will jam any gun this side of Heaven.

The rifles furnished Mr. Kaufman's military company are worthy of note as being the worst lot ever turned out by the Ordnance Department. Just what sight variations have to do with the bolt action is hard to see. Nor is it more reasonable to blame the hissing noise and the dropping of the bullet in front of the rifle to the fact that it uses the Mauser type of bolt. It might be done with a Winchester bolt—although this hardly seems reasonable after a careful reading of Mr. Newton's eulogy of this make.

With a little more experience Mr. Kaufman will doubtless learn that sights and barrels have nothing to do with the actions used and that a rifle may be good or bad in accuracy without the action being dragged into the case.

The variations of the sights as set forth by this gentleman are entirely foreign to the experience of the writer or of any other man who has handled the New Springfield to any great extent. In view of the fact that the sight base and rear sight occupy

the same position on the barrel on all New Springfields, it might be possible that no two rifles would shoot alike, due to the difference in the barrels. However, all military rifles as now turned out by our Ordnance Department are actually sighted at the arsenals, the front sights filed to the proper height and the front sight stud set over one way or the other to make the zero of the rifle agree with the zero of the sight. But when a man sets his sight for 500 yards with the peep and then shoots the open sight; or vice-versa; when he aims through the little opening under the drift slide by mistake, thinking it the peep, or makes other mistakes, the rifle often turns out to be horribly inaccurate. This is not theory, I have seen it demonstrated a hundred times by men who are careless—but the rifle gets the blame every time.

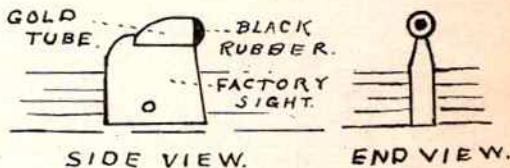
As to the roughness of the finish of our hurriedly made military rifle, this is true to some extent. But the military rifleman who has been in the service more than two months and does not know how to put on the fine touches that the arsenals did not have time to apply, is hardly much of a rifleman, nor is he qualified to write for publication on the rifle he uses. The roughness of a military rifle is no reflection on the action used. Mr. Kaufman's reference to the supposed inaccuracy of the New Springfield is a mere waste of time in view of the notoriously well made and carefully fitted New Springfield's past record for accuracy.

I very much suspect that Mr. Kaufman is a recruit in military lines, although his ideas are worthy of respect and note.

Yours truly,  
E. C. CROSSMAN.

### SPANISH MAUSER FOR GAME

EDITOR GUN DEPARTMENT: The cut enclosed represents the kind of sight which I have been using on my .30-30 carbine. It is made of a gold tube which encloses and protects a black rubber bead, using the regular factory sight as a base. The cut shows exactly how it is made. Please answer



the following questions: Is the Spanish Mauser adapted to big game hunting? What caliber is it? What is its point blank range? And, can I get soft nose bullets for use in it? Yours,  
A. W. TAFT.

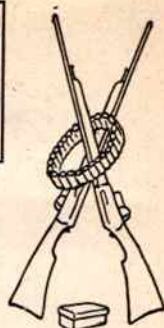
[The Spanish Mauser as used in Cuba is a 7 m.m. It was usually sighted to 300 yards point blank. The Winchester and U. M. C. Co.'s make ammunition, both full and half mantle bullets, for it. The bullet weighs 175 grains. It is an excellent rifle for big game.—R. A. K.]





# GUNS AND AMMUNITION

EDITED BY ROBERT A. KANE



## TOPICS:

THE BOLT VS. THE LEVER ACTION  
THE OPPOSITION'S FINAL WORD  
THE AUTOMATIC PISTOL QUESTION  
THE .22 RIFLE FOR SMALL GAME  
WANTED—A .22 CALIBER PISTOL  
A NEW IDEA IN SELF-LOADING ARMS  
FIRE ARMS AND AMMUNITION

## THE BOLT VS. THE LEVER ACTION

A REPLY TO MR. NEWTON

PART II

By E. C. CROSSMAN

**T**HERE are one or two points in Mr. Newton's defense of the lever type of rifle that I believe I can disprove. Mr. Newton points out the superiority of the lever action rifle in the take-down feature, which he evidently believes is confined to American-made lever action rifles and cannot be had in the rifles using the bolt action, as turned out by the European makers. He says in part: "With the bolt action one must use a screw driver and take the weapon apart, leaving loose screws and parts to get lost or misplaced, and when it is taken apart it still requires space for packing sufficient in length to accommodate the stock and forestock, which are *all* in one piece, also the length of the receiver is added to that of the barrel. Therefore the rifle cannot be carried in a Victoria case, nor can it be packed in any trunk of ordinary size." As Mr. Newton lays heavy emphasis on this point as being one in favor of the lever action type, we will "proceed to examine it somewhat." The bolt action used by the United States Army is naturally not a take down rifle. The bolt action rifles commonly sent to this country by the German makers are also not take-down models. It is just as easy to make a take-down rifle with the bolt action as with the lever action, and it is just as logical to argue that American rifles are not made in take-down models because all the rifles one has seen of this sort are solid frame as to make this statement in regard to the bolt action rifle. It is, however, a natural mistake in one who has made no study of the bolt action tribe of rifles. *Three different standard English makers make Mausers and Mannlichers in the take-down type and every one of these different types of take-down rifle is*

superior to the make-shift designs used by American makers. The rather humorous side of the situation is that friend Newton owns a Martini .318 rifle by one of the makers who turn out the take-down bolt action type.

Thomas Bland & Sons, No. 2 King William Street, London, who made Mr. Newton's Martini, turn out a splendid take-down Mauser rifle to take the .318 Accelerated Express cartridge. In this rifle the forestock is cut off at the junction of the barrel with the receiver, just as the forestock is in any other gun and the rifle can be taken down in a jiffy. Put up in a case with a telescopic sight, cleaning apparatus and cartridges, the rifle can be carried easier than any American rifle made, using the telescopic sight plan. Again, John Rigby & Co., the sole agents for the Mauser factory in Great Britain, make a fine take-down Mauser—or import it from the Mauser factory, as to this I do not know, but that they sell this type of rifle I do know. The address of this firm is 72 St. James Street, London, for friend Newton's benefit. Again, Westley-Richards make another type of take-down bolt rifle, both in the Mannlicher and Mauser. Take-down Lee-Enfields are common in England. I am willing to wager that if friend Newton will write to the Mauser factory at Oberndorf, Germany, or to the Sauer factory at Suhl, and ask for a take-down Mauser, he will get it at an increase in price no greater than asked for American rifles with this feature.

German makes of bolt action rifles commonly brought to this country are not take-downs, the makers probably feeling as I do, that a take-down rifle made for the ultra high power cartridges is



an unsubstantial form of construction—as proven by the experience of hundreds of hunters using our high power take-down rifles. It is a note worthy fact that the Winchester people, who are very careful and conservative, do not make their Model 1895 in the take-down type. The reason I do not know. Therefore, if a man wished to purchase a high power rifle—one made to shoot military cartridges of the 8 m. m. or 30-40 type and wished to get the rifle in the take-down type, *he would have to get the bolt action rifle to get what he wanted.* If Mr. Newton can get around this conclusion, I for one will be interested in hearing just how he does it. We will have to score one more point for the bolt action as at present made. Friend Newton holds that the fact that our western wilderness was in a measure conquered by the men who used the old Winchester proves its superiority at the present time beyond question. Our pioneers used the Winchester lever action for the same reason that our great-granddaddies used the flintlock—they could get nothing else. And the argument is just as strong in favor of the flintlock as for the Winchester for more wilderness conquering was done by far with the flint lock than with the Winchester or any other type of rifle. And the action of one is but little more out of date than the other. Some of my people came to California in the days of '49 in a wagon train. The fact that they reached here safely does not influence me greatly against using the California Limited when I desire to go east, even though it bears no resemblance to the old wagon train which proved in a measure satisfactory. There were bolt action rifles on the market at the time of our Indian fighting and wilderness conquering but at that time the lever action had the best of it. The bolt action has been improved consistently ever since, the lever action has stood still, as proven by a glance at the Model 1886 and the retrograde to the Model 1895 Winchester. Therefore for the present day sportsman, the bolt action with its thirty years improvement, as suggested during its use by the armies of every civilized nation in its wars of the past twenty years; its manifold features of superiority as worked out by the Ordnance Boards of the different nations and by the genius of Paul Mauser, is the best action from every standpoint—except that of the makers of the cheap and shaky lever action rifle. The bolt action stands on its proven merits and is the standard in every civilized country on the globe, except in the United States; the lever action is a make-shift, good enough thirty years ago, but now out of date and its sales kept up only through flamboyant and extensive advertising without a parallel anywhere in the world and only possible through the extravagant profits made possible by a high protective tariff.

Mr. Newton's stand that the extractor of the lever action rifle can be made as strong as that used in the bolt type may be correct. Mr. Newton's knowledge of the mechanical improvements which MIGHT be added to the lever action is extensive and no one has a greater respect for Mr. Newton's technical knowledge of the lever action than I. However, we are considering the two types as at present manufactured, not as they might be turned out. It is absolutely undeniable that the extracting device of the Mauser type is at present, about

ten times more reliable and efficient than that used on our common lever actions. If the lever action is *capable* of improvement along that line, then we have one more point against our makers for refusing to even patch up to the best of their ability their archaic, out-of-date lever action rifles. If the extracting device *cannot be improved*, then there are hundreds of disgusted riflemen—including myself—to testify to the fact that something new in the line of American high power rifle actions is urgently needed. The bolt action offers the best solution of the problem in the eyes of every ordnance board and in the eyes of all sportsmen except some of those inhabiting the United States where loud advertising can sell anything that is reasonably satisfactory, provided better goods are kept out by fair means or foul.

I am anxious to settle once and for all, the question of the alleged superiority in speed of fire of the lever action as compared with the bolt. Therefore I make the following suggestion to anyone who may be interested, barring only professionals in the employ of the arms companies who do nothing but shoot. I will go to the range of the Los Angeles Rifle and Revolver Club, of which I am secretary, with two members of the Southern California Rifles, the other National Rifle Association club in this city and will fire the following rapid fire strings on the regular military "A" target at 200 yards, using either my Mauser or my New Springfield:

1. Starting with rifle empty, both as regards magazine and chamber, I will load and fire five shots at command, using magazine fire of course.

2. Starting with rifle empty as above I will load and fire five shots, using rifle as a single loader and putting every cartridge in as I fire the preceding one.

3. Starting with rifle loaded, both magazine and chamber or six shots in all, I will empty it at the target.

4. Starting with rifle loaded with five cartridges, one of them being in the chamber, I will fire twenty shots at the target, at the command, time for loading between magazine loads to be counted in the total time for the firing.

In case of a jam, the string not to be repeated but only the shots fired to count as part of the test is for reliability.

The total made on the "A" target for each string to be counted. Then one-half point to be deducted from the score for each second consumed. For example, supposing twenty to be scored in the five shots, using rifle as a single loader but the string required twenty seconds to complete, the total score would be ten. This would give both the accuracy and the time used a value in computing the scores. I do not believe that anything could be gained by this system by either sacrificing time at the gain in accuracy of fire or vice-versa. For instance one man shoots his string of five single-loaded shots in twenty seconds and scores twenty. He might have used 25 seconds and made two points more, or a total of 22 but his time deduction would be 12½, leaving him with but 9½ points total. And the reverse would be true, if he shot his string in fifteen seconds—about the limit for this style of fire and scored 17—all he could hope for in the time used, his deduction for time would be 7½ points, leaving him with but 9½ points again. I have never seen this worked out but believe it would



be a fair compromise between accuracy and time.

I would be glad to try this out against Mr. Newton as I know him to be an expert shot in the Schuetzen style of fire and a man accustomed to the handling of rifles but failing him, then I will be glad to shoot against any other rifle enthusiast who is my position—merely a rifle crank but who does not shoot for money or who is not in the employ of any arms or ammunition company. Were I Lieutenant Whelen or any other of the members of the five leading teams at Camp Perry this year I would bar no one as I am satisfied that such men can hold their own against any user of a lever action gun.

Not being in the expert class I therefore make the offer only to those who shoot the rifle for pleasure.

I further stipulate that no lever action be used that does not handle cartridges of the class of the 8 m.m. or the 1906 Model. It seems to be the belief that it would be a fair test to stack up some lever action rifle of the class of the Marlin .22 or some light cartridge of the 25-20 or even the 30-30 calibers against bolt actions handling powerful cartridges and cartridges having a heavy recoil. Therefore nothing would be eligible for this trial

excepting the Winchester Model 1895, box magazine, handling either the 30-40; 30-45 or the 1906 cartridge. To use rifles having light, short lever throws and having but little recoil in a competition against rifles of the 8 m.m. class, would be manifestly absurd from the standpoint of fairness.

Any one taking me up on this to shoot on a regular range before two reputable witnesses and to send the details of each score to Mr. Kane for publication. These including the score made at each range on the target, the time consumed and the total with the time limit deducted, with details as to whether any jams took place, etc. I agree to do the same. This is not made in any spirit of boasting or any desire to "show off," as I am not expert enough for any of the latter and too liable to be beaten for the former but I would like to see the question settled by actual test. Given a man of my own skill—or lack of it and I believe I will win hands down. Perhaps I will know better after the test. The offer is now open. I will be glad to hear from other riflemen who don't believe as I do in the superiority of the bolt action. Replies to be addressed to Mr. R. A. Kane.

See page 130

## THE OPPOSITION'S FINAL WORD

### PART I

By CHAS. NEWTON

**M**R. CROSSMAN having replied in the October number to my discussion of his article in recent numbers of the Outer's Book on the relative merits of bolt and lever action rifles, and as there still seems to be some matters upon which he is not quite clear, a little further discussion might not be unprofitable in view of the wide-spread interest in this subject.

By way of preface I wish to acknowledge my appreciation of his opening statement that in my article, which covered over four pages of this magazine, he was "unable to find anything that seems to me to accord with facts." In other words, throughout the whole article there is not even a single statement which is true. But as his statement above quoted may be intended to be read "from the standpoint of the non-expert" (see October Outer's Book, page 413) it may be subject to his usual discounts.

The bulk of Mr. Crossman's article can be disposed of in a few words, the remainder merits a more careful consideration.

He first states that I compared the bolt action rifles of 1879 with the lever action rifles of the present day. *The American public*, who used these rifles, compared the bolt action rifles of 1879 with the lever actions rifles of the same date, and later the high power bolt action rifles with the lever action rifles of contemporaneous date and it was *its* verdict which I quoted, not my own. The American bolt action rifles of thirty years ago should be compared with the European bolt action rifles of a similar period, and they will not suffer in comparison. Likewise the American rifles with which

to compare the present Mauser and the Mannlicher are the Lee straight pull, the Remington-Lee and the Blake.

In Mr. Crossman's first article he dwelt upon the bolt action rifle being a *new thing*, and to show that it was not new I cited several arms and among them the Remington-Lee rifle as built for the high power small bore cartridges, which rifle was on the market for a number of years and which compared favorably with foreign rifles of the kind Mr. Crossman approves, and was not popular.

Mr. Crossman therefore attacks this rifle, speaking of it as "the archaic and condemned Lee" (page 392), and then devotes a half page to proving the weakness of the British service rifle, variously known as Lee-Speed, Lee-Enfield and Lee-Metford.

As to the "condemnation" of the Lee rifle I will quote from Dr. Hudson's work "Modern Rifle Shooting from the American Standpoint," page 34, as follows:

"The Remington-Lee is also a remarkably good action for a long range rifle of the high power type, and it may be here stated that if the rifle comes from the Remington factory the shooter need not worry about its ability to pass the tests here outlined for Remington rifles of sterling quality."

As to the applicability of the discussion of the British service rifle to the Remington-Lee, the rifles are alike in that both use the Lee box magazine, and both are actuated by a bolt handle, but here the resemblance ends.

The British service Rifle has a two piece stock, the bolt locks only at the rear end and the receiver, between the locking lugs and the head of the car



tridge, is weakened by a slot to accommodate the cut-off; these are the objectionable features of this model.

On the other hand the Remington-Lee is a one-piece stock, *locks at the front end of the bolt* and has all the other up-to-date features of the latest Mausers and Mannlichers, with the exception that the firing pin is not cammed back, but the cocking is effected as the arm is closed, and even this feature was in use on the Mausers at the date it was in use on the Remington-Lee, the change having been made only very recently, and while it was an improvement it is of only minor importance.

Mr. Crossman seems to be laboring under a decided error in regard to the mechanism of the Remington-Lee rifle, since he says of the British service rifle: "Their bolt, *without a forward lug*, will not stand a chamber pressure," etc. (page 393), and in the next column (same page) after quotations of opinions on the British rifle says: "*This is the new and up-to-date rifle which the Remington Company failed to make popular in this country, the action being practically the same in both cases.*"

Why Mr. Crossman should make the above deliberate mis-statement I am at loss to understand.

He has demonstrated above that the bolt of the British service rifle locks only at the rear end, while the Remington-Lee locks at the front end, and he will hardly maintain, after the emphasis which he has laid upon the importance of locking

Third. Do you consider the *location* of the locking lugs, whether at the front or rear end of the bolt, to be an important feature of a bolt action rifle?

Fourth. Can the action of a bolt action rifle which locks the bolt only at the rear end be *practically the same* as one which locks the bolt at the front end?

A frank, straight-forward answer to the above questions is earnestly requested, with the suggestion that in case the Remington-Lee high power type is claimed *not* to lock the bolt at the front end the writer is ready to publish cuts and drawings of both this rifle and the British service rifle.

If the Remington-Lee is stated to lock at the front end of the bolt will Mr. Crossman please explain the statements above quoted?

The Remington-Lee is not the only bolt action rifle which the American public rejected during the past fifteen years, as witness the Blake rifle put on the market in the early 90s, adapted to all the then current high power cartridges and also to a .40 caliber cartridge of about the same power as the Winchester .405. This rifle was a splendidly built weapon weighing from 6½ pounds upward, selling at from \$30.00 upward, made to order, locking lugs at the front end of the bolt, cocking by rotating the bolt, clip loading as far as sporting purposes were concerned in that one magazine was dropped out and another inserted at one



THE BLAKE RIFLE

at the front end of the bolt, that a rifle which locks only at the rear end is *practically the same* action.

If Mr. Crossman were not posted as to the difference in the mechanism of the two rifles such a statement would be excusable as there are very few of the Remington-Lees in use and the British service rifle is not in use in this country at all, but he professes absolute familiarity with both these weapons.

On page 394, October issue, he states: "I have used the Lee-Remington, both in the .45 caliber and in the modern small bore high pressure type, for years . . . I have used the Lee-Speed of England."

If Mr. Crossman *has actually used* these rifles, as he says he has, and did not learn of the difference in construction he indeed is unobservant; if he has not used the rifles, or if he has used them and did observe the radical difference in the mechanism above noted, it is unnecessary to characterize his statement; the facts speak for themselves.

And in this connection I now ask Mr. Crossman four questions and request straight-forward, unequivocal replies over his signature, the questions being as follows:

First. Has the British service rifle any locking lugs or longitudinal bolt support at the front end of the bolt?

Second. Has the Remington-Lee high power type of rifle double locking lugs at the forward end of the bolt?

movement, and in every way the equal or superior as a *sporting rifle* of the modern foreign bolt action rifle and to-day it is but a memory.

Mr. Crossman may cite the government reports on the tests of the Blake rifle as showing certain defects but the same reports will show equal defects in any of the rifles tested by the Ordnance Department except that the Blake was not suitable for a *military rifle* because of its using extra magazines instead of the lighter clips.

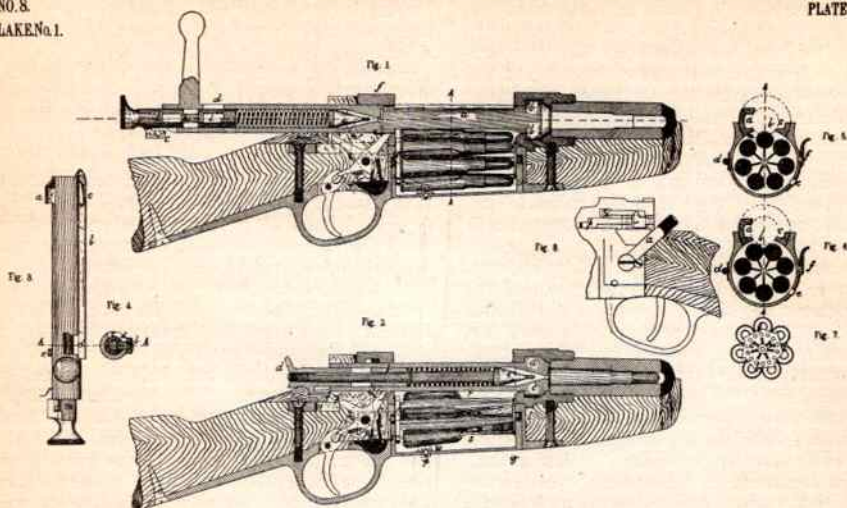
Considerable space is used by Mr. Crossman in showing that all civilized governments adopted the bolt action for military purposes; they did this because it is the best action for *those purposes* since the lever action cannot be used to advantage from a prone position and the other qualities of simplicity of construction, ability to withstand misuse and the practicability of clip loading are of great importance in the military rifle, while in the sporting rifle, when speed of fire to the capacity of the magazine is more important than facility in recharging, (as by the time the contents of the magazine is spent the game is either dead or absent) and where trimness of outline and ease of manipulation may be indulged in at the expense of absolute simplicity of parts, the lever action has always been the favorite.

Mr. Crossman might urge with equal force that all the governments of the world use a thick, heavy, clumsy stock on their rifles, but this is no reason why it should be used on a sporting rifle, and he



NO. 8.  
BLAKE No. 1.

PLATE V.



SECTIONAL VIEW OF THE BLAKE RIFLE

expressly praises the trim neat outlines of the stock of his rifle, although, if his rifle were to be used in military service the stock would soon give way owing to the strains to which it would be submitted. Therefore the fact that the bolt action is universally used as a military rifle has no bearing upon the question.

Mr. Crossman has commented upon the Lee straight pull rifle and the Winchester Model of 1895, but I have mentioned neither of these rifles as I do not admire the design of either, but Mr. Crossman's criticism and also some by Lieutenant Whelen, have gone to the extent of condemning *all lever action rifles*, and one of my points is that this condemnation should be qualified in the case of rifles to which it is not applicable such as the Model 1886 Winchester. Both the above gentlemen have stated in print that the lever action rifle has been tested by Ordnance Boards and found lacking in strength. The writer will be pleased to be referred to the reports of any Ordnance Board of any nation which has ever tested the Model 1886 Winchester, because this is universally conceded to be the strongest of the lever action rifles, and unless this model has been tested such statements are misleading and should be qualified.

I note the statement that the Hotchkiss rifle was "made by a factory that is not noted for its fine finish or attention to the balance of the arm which it turns out." It was made by the Winchester Repeating Arms Company and I think the reputation of this firm's goods needs no defense. As to the Savage rifle this acquired popularity very quickly because it improved upon the tubular magazine without sacrificing the lever action. There is no question but that the revolving magazine is better than the tubular in actions to which it can be adapted, but the lever action was so much more popular than the bolt that the public

would rather put up with the tubular magazine than work the bolt handle until the Savage offered a compromise, and the Savage action is not strong enough to withstand the strain of the military high power cartridges.

Comment is made upon the writer not having "heard of rifles jamming." By this he means not indefinite statements, such as those made by Mr. Crossman and a few others, but the citation of specific instances. As stated by Mr. Crossman, Lieut. Whelen admits that the bolt action rifles do jam, but in such cases charges the operator with ignorance or carelessness but no such excuse is urged in extenuation of the jamming of the lever action.

Mr. Crossman further publishes a letter from the Commandant of the United States School of Musketry showing that even in the hands of those experts the proportion of jams in the New Springfield is one in each one thousand cartridges fired.

As far as the writer's personal experience goes he has fired many thousand rounds from Winchester and Marlin lever action repeaters and has yet to encounter the first jam.

As to firing a lever action rifle with the lever partly open, this could not be done unless done deliberately, because the hand in grasping the small of the stock closes the lever effectively to the limit, while in the bolt action rifles care has to be exercised to push the bolt completely down.

Mr. Crossman quotes a Mr. Stevenson, who claims to have assisted in treating a man who was injured by the blowing out of the breech bolt of a *lever action* rifle. Mr. Crossman supplements this with the information that it was a model 1886 Winchester.

I wish either Mr. Crossman or Mr. Stevenson would describe the appearance of the broken weapon in detail, showing how the bolt was permitted to



escape to the rear, as it would be of much interest, and while such accidents might happen with some types of lever action rifle, until more complete details are given as to the manner in which the bolt escaped from the fastenings of an 1886 model Winchester the writer must entertain a polite misbelief.

Mr. Crossman states (page 394) that he has used the Remington-Lee, both in .45 caliber, and modern

mounting is of no importance, and while the camming back of the firing pin is a slight improvement over cocking on the forward movement, this is trivial and could not account for a rejection of the entire type of rifles, and it is a little singular that these two comparatively unimportant items were sufficient to attract his attention to all the strong points of the bolt action which he has described for us and which were unnoticed by him during all



THE REMINGTON-LEE SPORTING RIFLE

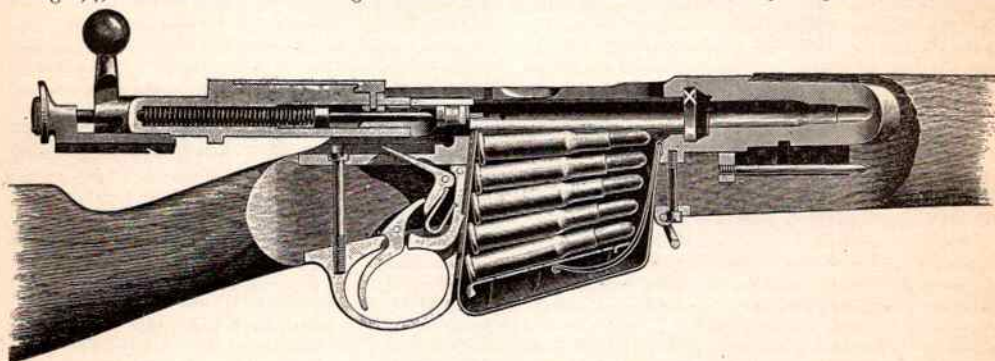
high power types for years, was familiar with the Hotchkiss, has used the Lee straight pull and Lee-Speed, used the Krag since its first issue to the National Guard and the New Springfield following, also a Spanish War Mauser, all bolt action rifles, but it was not until he saw the Mannlicher that the scales fell from his eyes and he realized all the beauties of the bolt action, and this was *but one year ago* (page 396). Mr. Crossman also stated that the cartridges used with the older type of rifles were safe in those rifles so we will analyze his experience a little.

The main points dwelt upon by him in his arguments are the lighter weight, better balance, greater strength, greater ease of dismounting and assembling,

the years he was familiar with them, and convert him from a frame of mind in which he "still considered the lever action to be superior for hunting rifles" (page 394) to an enthusiastic advocate of the foreign bolt action.

Did it never occur to Mr. Crossman during all these years and through all this experience that the lever actions jammed while the bolt actions did not, that the lever actions were complicated while the bolt actions were not, that the lever actions were weak while the bolt actions were strong, that the lever actions were slow and difficult to dismount while the bolt actions were easy and rapid?

Evidently not, since it remained for the little detail of method of cocking the piece to effect this



SECTIONAL VIEW OF THE REMINGTON-LEE RIFLE

bling, simplicity of construction, greater durability and finer finish of the foreign arm.

As to weight and balance, strength, simplicity, durability and ease of dismounting and assembling, the Remington-Lee at least *should have* attracted his attention as it was the equal of the present Mannlicher or Mauser in all these points, and the only point of difference which Mr. Crossman has indicated is the longer time taken to dismount and which is so small it requires a stop watch to detect, and the rifle cocking on the closing movement instead of camming the firing pin back. In a hunting rifle such a minute loss of time in dis-

wonderful change of heart and open his eyes to all the other propositions which had been unnoticed by him for a great many years. The average shooter would be far more likely to notice the difference between a rifle which jams and one which does not jam, the complications of construction or lack of balance or any of the vital points now so strongly urged by Mr. Crossman as points of superiority of his foreign rifle than to notice the little difference of detail as to whether the hammer was cocked on the backward or forward movement of the bolt.



# THE AUTOMATIC PISTOL QUESTION

## A REPLY TO A CRITIC

By R. A. KANE

IN the columns of another magazine, under the caption of "Automatic Pistols," appears an article from the pen of a well known contributor to sportsmen's periodicals, whose articles on matters pertaining to fire arms entitles him to respectful consideration. With thousands of others I have enjoyed and derived much benefit from his literary work, and although he has seen fit to adversely criticize some of the statements made by me in an article on the revolver, published in the April number of the *Outer's Book*, I bear him no ill will and will try and answer some of his criticisms. In doing this I want to be fair and logical, to publish facts only, and I pledge my lasting good will to those of my critics who, in the language of the forum, with logic or other acceptable testimony will prove me to be in error. Answering my critic I will say that I have never at any time claimed that the automatic pistol of any make, in its present stage of development is a perfect arm. But I do claim and I expect to prove, that its mechanical principle has fewer physical limitations, and its possibilities in the way of improvement are infinitely greater than those of any other type of the one hand gun. The first successful model of the revolver was given to the American people in 1835, nearly seventy-five years ago. Improvements have been added from time to time, but they were improvements of detail, not of principle. Within the year the original company has again improved the revolver to such a degree that most of their models, not practically obsolete, have been affected by the change. The latest improvement, however, is one looking to greater safety in handling the arm, and in no way affects the essentials of the weapon's performance. Before proceeding to a discussion of the relative merits of the revolver and automatic pistol, it would be well to define what would be considered a serviceable caliber for a one-hand gun. A serviceable caliber for any one, outside of military service, would depend largely on individual choice and the nature of the service for which the arm was intended. For military service it is altogether different. One caliber is all that is permitted except for experimental purposes. The military pistol must possess the necessary stopping power as a prime requisite. Speed of fire, while extremely desirable in any arm, must always be held slightly less important than satisfactory stopping power; yet, there is no good reason why we should not have both. "The English troops, in their wars with the wild tribes of Africa, early learned the necessity for stopping power in their pistols. Their army revolvers were of .455 caliber, shooting a cartridge containing 18 grains of powder and 250

grains of lead, yet many of the officers discarded their service revolvers in favor of double barreled pistols, caliber .577, and four-barreled pistols, caliber .476, on account of their greater stopping power." (See Gould's *Modern American Pistols and Revolvers*) Prior to the adoption of the present .38 caliber (actually .366 caliber) the .45 caliber single action Colt was the official revolver of the United States service. The cartridge used was the 45-40-250, fully twenty-two grains more powder than the English cartridge. I have never heard any complaint of lack of stopping power while this cartridge was in use in the army and on the frontier. In 1892 the double action Colt, .38 caliber, was adopted by the army, but it was not until the test of actual service in the Philippines, nearly seven years later, that its shortcomings as a service arm were discovered. My critic says: "I should like to know whether the author (meaning myself) intends to convey the impression that the revolver was not found fully equal in speed, mobility and sustained fire to the requirements of the work in the Philippines." Although my critic carefully ignores the weakest point of the .38 D. A. revolver as developed in the test of actual service, I will answer him direct, *that it did not*. It failed in shocking power. It failed in mobility, in so far as that it could not be used as a double action arm with accuracy, and it failed in the sustained fire test for the reason that through lack of stopping power it required more shots to put an assailant out of action than the cylinder contained. It is a matter of fact that there were instances where, having exhausted the shots in the cylinder, the empty weapon was thrown at the enemy, there being no time to reload the six-shot weapon by the only method then available, one cartridge at a time. Testimony of this nature was not infrequently to be found in military and sportsmen's journals in the years immediately following the active fighting in the Philippines. While on the subject of sustained fire, I would like to suggest that if that splendid officer who died so bravely at the battle of Wounded Knee had been armed with a pistol of equal stopping power and greater magazine capacity, or one that could be reloaded quickly, like the .45 caliber Colt Automatic, Capt. Wallace might still be with us; perhaps as chief of the United States Ordnance Board, and by reason of his experience selecting a pistol of greater fire endurance than the one whose limited cylinder capacity and slow reloading system cost him his life. Surely, Capt. Wallace could not be charged with lack of skill as a marksman, or the courage to use it. Having shown that the large calibers are essential in a service arm, let us see how they work out in the two types

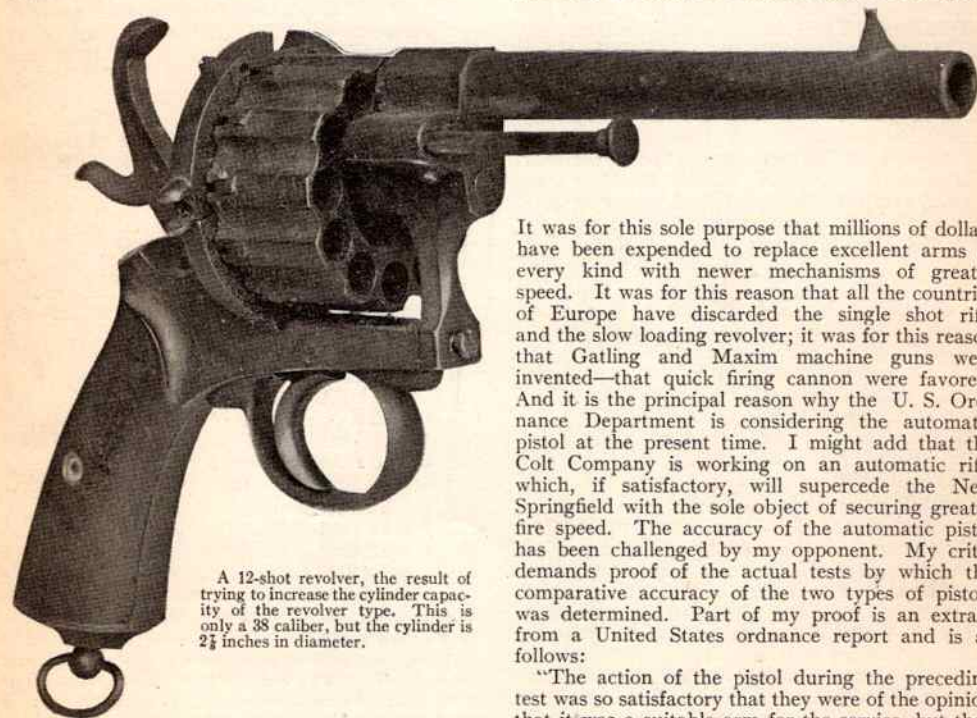


of arm. It is, of course, understood that the ammunition of the future must be loaded with smokeless powder and that the chamber pressures must increase rather than diminish. Obviously then our pistols should be made stronger, instead of weaker. The present dimensions of our .45 caliber revolvers mark the extreme limit of size and weight in revolver construction that would be accepted by either military or civilian experts. The Smith & Wesson Co. produce as good revolvers as can be made anywhere; presumably they put as good material in their arms as it is possible to obtain, yet they do not guarantee their revolvers for smokeless cartridges. What are we to infer from this? Simply that these arms being originally designed for use with black powder cartridges, do not possess a sufficient margin of strength to ensure the use of more modern ammunition with absolute safety. With a weight and size limit arbitrarily established as it is, and must ever be for the one-hand gun, every increase of caliber must necessarily result in a further weakening of the arm. This applies more especially to the revolver types in which the cylinder is concededly the weakest point. The .38 service revolver, on account of its smaller caliber, has thicker chamber walls than the .44 or .45 caliber, therefore it is logically stronger, and capable of sustaining proportionately greater chamber pressure; yet we frequently hear of service revolvers of the best makes being blown up while using the regular service ammunition. It is worthy of notice in this connection, that in every instance it was the cylinder that proved to be the weakest point. Various theories have been advanced as to the cause of the trouble. Among others it was suggested that perhaps the loading machine failed to function properly, and that sufficient powder to drive the bullet through the barrel had not been placed in the shell. This theory is logical, and may be the correct one. However, my critic acknowledges that there is an escape of gas at the joint between the cylinder and barre equal to 17 or 18 per cent of the total energy. Now I am just foolish enough to believe that if the energy thus wasted had been properly directed *into the barrel and against the base of the bullet*, it would have driven the bullet out, saved a valuable weapon, and the shooter would have been in no danger of being killed or mutilated. Another theory of the cause of the wrecked revolvers is that the reloading machine, failing to function on one shell, double loaded the next. This theory is also plausible. No weapon of the revolver type, with its inherent chamber weakness, could be expected to withstand the excessive pressure developed, by a double load of smokeless powder. My critic further says that the escape of gas at the joint of the revolver is "entirely harmless and negligible." Now I have always been under the impression that a leak of any kind is undesirable. A loss of energy equal to 18 per cent of the whole cannot be ignored, whether it be in a waterpower, a steam supply, a man's pocket, a six-shooter or a national bank. We all know how quickly a service rifle will fall off in accuracy and elevation when the gas begins to squeeze past the bullet through erosion of the barrel. The fault peculiar to the revolver might not be so bad if it were constant, but it is not, it varies with the pressure, and kind

of powder used, the weight, fit, and temper of the bullet, and the length of time the arm has been in use. The loss of energy in some of the older revolvers has been known to approximate nearly 40 per cent. The limitations of the revolver are so obvious and so numerous that they are easily apparent to even those who do not wish to see. Its good points are many, and admirable, but the principle upon which it is constructed fixes the arbitrary limit of its improvement. My critic unwittingly concedes this point when he says, "that as far as the effectiveness of the first six shots are concerned, the revolver has not improved appreciably in the past sixty years." He might also have added that except for the difference in the material used in its construction the revolver is not as strong a weapon as it was before the swing out system was applied; the latter is a weak point and a complication rendered necessary by the exasperatingly slow method of reloading. Another doubtful expedient adopted for the purpose of accelerating the initial fire speed and to eliminate as far as possible the personal equation in manipulation, is the double action lock, which has become a distinguishing feature of modern revolvers. Several attempts have been made by armorers in various parts of the world to increase the cylinder capacity of the revolver by enlarging its circumference so as to increase the number of cartridge chambers. I have one in my collection, a .38 caliber, holding twelve shots. I know of another that holds twenty shots, ten .38 caliber and ten .32 caliber. The latter arm has two barrels, mounted according to the superimposed system. A casual glance at these unique arms reminds one of an old-fashioned over-shot, rustic water wheel. A holster made to accommodate either of these freaks would necessarily be modeled over a huge mushroom. Not one shot has been added to the reserve fire of the revolver since it was invented and in the nature of things there never will be. The 18 per cent loss of energy was born with the original revolver and is still perpetuated in its posterity. With the invention of modern explosives, arms that were constructed on a principle that could be strengthened and modified to withstand the tremendous chamber pressures, were utilized, but the revolver was not one of these. The only way to strengthen the revolver is to reduce the bore or enlarge the whole arm, or both. It is true that smokeless ammunition is being used in revolvers, but it is more on account of its non-fouling qualities than for any marked superiority in its ballistic performance. It is simply a case of adapting the powder charge to the pressure limit of the cylinder. That the revolver, in a serviceable caliber, has reached its limitations, is amply proved by the fact that the United States ordnance department have experts at work on the Colt .45 caliber automatic pistol making improvements considered necessary for military service. It is more than likely that some type of automatic pistol will be adopted by the United States army. And it is high time. We were the last civilized nation to adopt the modern military rifle, and as a result of our slowness were compelled to go abroad for our mechanism. We will again be at the wrong end of the procession in adopting a modern pistol, but, unless we listen to the reactionaries, we will not be humiliated by being again forced to depend



on foreign inventions for our mechanisms. Nearly every country making any pretensions to positions among the nations of the earth, has already adopted some type of automatic pistol. Spain has adopted the Bergman 9 m.m., Belgium the 7.65 m.m. Browning, Sweden the 9 m. m. Browning, Germany the 9 m. m. Luger for both army and navy, Austria the Roth, Switzerland the 7.65 m. m. Luger, Italy the Glisenti, while the irrepressible Jap has perfected an automatic pistol which is being manufactured in quantities at her home arsenal for the use of her forces. My critic says, "No man appreciates more fully than I the advantages and conveniences that the automatic pistol might afford, if they were not so overwhelmingly counterbalanced by vital defects, defects inseparable from the type, and which no improvement can ever obviate."



A 12-shot revolver, the result of trying to increase the cylinder capacity of the revolver type. This is only a 38 caliber, but the cylinder is 2½ inches in diameter.

This is rather a sweeping assertion and a direct challenge to the intelligence of Americans. The only specific charge which my distinguished opponent has made against the automatic type of arms is its liability to jam, which is not a fault of principle, but merely a matter of detail. Nearly all the successful military arms of the world are constructed on the same general principle. Our own new Springfield rifle, the best of them all, belongs to the same system lacking only the auto-loading feature, yet it fails to function less than once in a thousand times. The Winchester Company makes four, and the Remington as many more, different calibers of recoil operated arms, identical in general principle with the automatic pistols, yet they are in every way successful arms. Is it possible that the inventive genius of a people who have given the world machinery of almost

human intelligence, like the sewing machine, the power-press, the linotype and a hundred other machines far more complicated, will acknowledge itself baffled by a problem as simple as the action of an automatic pistol? Ask Maxim, or Browning or Bergman, or Luger, or any other mechanical engineer worthy of the name, what physical obstacle, or any other, there is to prevent the improvement of the automatic type of pistol so that it will function as perfectly as any other machine of human invention and construction. My critic also states, "that for all practical purposes the revolver is capable of being fired quite fast enough." He certainly has the courage of his convictions in making this statement. In the face of the overwhelming evidence that in every country in the world the constant endeavor has been to attain the extreme limit of fire speed.

It was for this sole purpose that millions of dollars have been expended to replace excellent arms of every kind with newer mechanisms of greater speed. It was for this reason that all the countries of Europe have discarded the single shot rifle and the slow loading revolver; it was for this reason that Gatling and Maxim machine guns were invented—that quick firing cannon were favored. And it is the principal reason why the U. S. Ordnance Department is considering the automatic pistol at the present time. I might add that the Colt Company is working on an automatic rifle which, if satisfactory, will supercede the New Springfield with the sole object of securing greater fire speed. The accuracy of the automatic pistol has been challenged by my opponent. My critic demands proof of the actual tests by which the comparative accuracy of the two types of pistols was determined. Part of my proof is an extract from a United States ordnance report and is as follows:

"The action of the pistol during the preceding test was so satisfactory that they were of the opinion that it was a suitable arm for the service, but they decided to make additional endurance tests in order to determine what weaknesses would be developed by long continued firing and to discover if possible, what was the actual life of the pistol. Many shots were therefore fired from it and the board reached the conclusion that the endurance of the Colt's Automatic pistol appears to be *greater than that of the service revolver*. The test to which this pistol was subjected was in every way *more severe than that to which revolvers have been heretofore subjected*. The board also found that it possessed these further advantages. Very simple construction; it is easy to operate; *not liable to get out of order*; it is capable of a very high rate of fire; it can be conveniently loaded with either hand; it gives a high initial velocity and flat trajectory; **IT IS MORE ACCURATE THAN THE REVOLVER**. In the opinion of the board this pistol is a suitable



arm for use in the United States service and it possesses numerous advantages over the revolver." Now it will be observed that the above is not the prejudiced vaporings of an enthusiastic partisan, carried away by his own eloquence, but the cold, deliberate report of a board of officers who are technically educated for the purpose of selecting arms of every kind for the most exacting service. My critic speaks disparagingly of the ability of staff officers to select a pistol for the use of our forces. He seems to forget that in many instances staff officers have risen from the ranks, have served as line officers, where they have every opportunity for observing the failures as well as the good points of the service weapons. It should also be borne in mind that arms of every kind are tested by the ordnance department of other countries, so that any false or biased report would soon be exposed. It has been charged that "the automatic pistol would jam and break down just as often and as cheerfully when it was being tested by an ordnance board composed of its most enthusiastic advocates as with any one else." This being true, the ordnance report is a complete vindication for the auto-pistol. I presume army officers have their likes and dislikes and their prejudices like the rest of us. However, I have yet to learn that a single report of the ordnance department has ever been challenged or impeached. It is easy to understand in the absence of an actual test in action how a pistol lacking the necessary stopping power could be adopted. Our ordnance officers had had no previous experience among racial and religious fanatics and their assassin-like methods.

In the numerous tests which I, as an amateur, have personally conducted, from a fixed rest, I have seen nothing to warrant me in saying that, all things equal, there is any material difference in the comparative accuracy of the two types. I have shot dozens of revolvers of the very best makes, belonging to local military organizations. I have also tested and sighted many of the automatic types. The results obtained at first, with either type, would not be wholly satisfactory to an expert marksman. Yet 95 per cent of all the arms tested shot close groups and would make extremely accurate arms when properly sighted. Theoretically considered, the automatic should be the more accurate as the cartridge is placed directly in the chamber of the barrel and securely locked. There is no joint in the bore to permit nearly one-fourth of the energy to escape. No unrifled and throated section of the bore for the bullet to jump. The correct principle of gun-building makes no provision for a joint in the barrel or a break between the primer and the muzzle.

All revolving types of fire arms are practically obsolete. The Gatling gun, which was simply a mammoth revolver, has been displaced by the Colt rapid fire gun which is only an automatic pistol of larger growth, and I believe, is the product of the same fertile brain that produced the Colt automatic pistol, the Remington automatic rifle and shot gun, and most of the hand-functioned sporting rifles in use in America today. The French nation has discarded the revolving cannon and Mitrailleuse, and nowhere is the revolver principle retained as a feature of modern gun architecture except as a magazine, separate from the breech closing mechanism as in the Savage and

Schoenauer-Mannlicher rifles. The Colt-Browning automatic has none of the limitations as exemplified in the revolver system. It is the very acme of accomplishment in the way of economy of space and compactness in a fire arm. There is no bulging cylinder or projecting magazine. There is no wide swinging crane to spring and knock out of line, if the arm should be accidentally dropped while open. There are no hinges to wear or joints to spit hot gas or powder grains. It has a capacity of eight instead of six shots and can easily be increased to ten. The empty clip can be dropped out and a full one substituted in less time than it takes to eject the six empty shells from a revolver. The line of recoil in the Colt automatic pistol is nearer the point of support and resistance than in any other one-hand gun, the center of the bore in the .38 pocket model being just one inch above the line of resistance. On the .38 caliber Colt service revolver the line of recoil is 2½ inches above the hand. This feature, so undesirable in any pistol, but unavoidable in the revolver on account of the diameter of the cylinder, is practically eliminated in auto-pistols of the Colt and Savage types. Another great advantage of the Colt-Browning pistol is that it can be enlarged to any caliber that would be possible to fire with one hand, without becoming unwieldy and cumbersome. The .45 caliber Colt automatic is but ¼ of an inch in thickness. It would only be necessary to enlarge it slightly and strengthen the chamber to make it any reasonable caliber with a sufficient margin of safety. The .44 and .45 caliber revolvers are already too large and heavy, and it was found necessary to adapt the smokeless powder charges to their safety limit. It is worthy of note that there is practically no difference in the ballistic performance of black and smokeless powder ammunition when used in revolvers. If the revolver has the safety margin claimed for it by my critic, why has not its ammunition been made at least equal in performance to that used in the automatic pistols of corresponding caliber? To my mind, this proves another of the limitations of the six-shooter and it is evident that the manufacturers are of the same opinion. While the ideas of individuals may vary in regard to what may or may not be considered models of beauty, there is a standard upon which a majority will agree, American armorers have established the world's standards for beauty, symmetry and proportion. They have never tried to give us freak or hybrid guns. The English produced a well made revolver known as the Webley, but it could never lay claim to beauty. It was later converted into an eight-shot automatic revolver which looks like a cross between a jack-plane and a cornplanter, but resembles nothing so much as what an eight-shot revolver might be expected to look like.

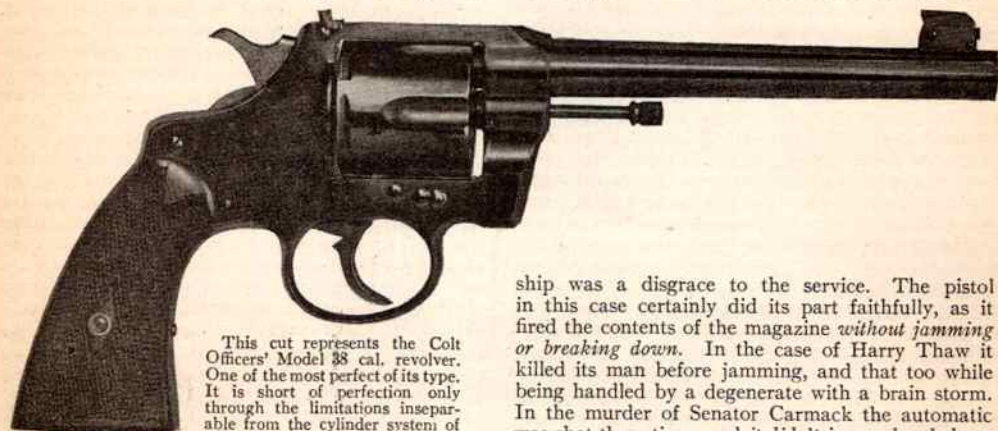
My esteemed opponent refers to the number of pistol matches won with the revolver as compared with the automatic pistol. There are several good reasons for this, none of which are mentioned by my critic. To begin with, most of the expert pistol shots of the country are middle-aged men who have been shooting the revolver exclusively for years before the automatic was invented. Naturally they are loth to jeopardize their reputation as marksmen by shooting a new gun of a different principle, of different weight and balance,



## The Outer's Book

smaller caliber, and equipped with service instead of target sights. The difference of caliber alone will sometimes determine the outcome of a contest; experts know this and in the absence of rules, to the contrary, use the .44 and .45 calibers. The United States is the home of the revolver. It was here that it reached its highest development,

cartridge is given the necessary energy, velocity, weight and shape of bullet. It is, therefore, illogical and unfair to pronounce an arm a failure when the cartridge alone is to blame. The shooting of Annis by Capt. Peter Hains proves nothing except that his cartridge lacked the necessary stopping power and that the Captain's marksman-



This cut represents the Colt Officers' Model 38 cal. revolver. One of the most perfect of its type. It is short of perfection only through the limitations inseparable from the cylinder system of fire arms.

and there is a greater number of revolvers in use among exclusive target experts than of any other type of arm. In many of the revolver matches the automatic was not represented at all. The automatic is not made in target model in the United States, and until recently it was only made in .32 and .38 caliber. Most of the revolver records have been made by exclusive target experts with

ship was a disgrace to the service. The pistol in this case certainly did its part faithfully, as it fired the contents of the magazine *without jamming or breaking down*. In the case of Harry Thaw it killed its man before jamming, and that too while being handled by a degenerate with a brain storm. In the murder of Senator Carmack the automatic was shot three times and *it didn't jam or break down* and although Young Cooper gave a splendid exhibition of how not to shoot an automatic quickly, my critic has given us unimpeachable evidence that the ".45 caliber Colt automatic can be drawn cocked and fired quicker with one hand than any of the Police Positive models." My opponent tries to show by the experience of Major John P. Hains of the artillery, that the Colt .45 caliber automatic is unreliable because, while giving an exhibition, his



A 38 cal. Officers' Model Colt, swing-out system. A device which while it facilitates the act of refilling the cylinder, detracts from the natural strength of the arm.

target revolvers of the largest size and the widest caliber. Thus it was the field, the caliber, the length of barrel, the sights, the weight and balance, the trigger pull and the great skill of experienced marksmen against the automatic. Lacking any of the features above named, a weapon of any type would be seriously handicapped in a contest with such marksmen as may be found in the United States Revolver Association. The ordnance department has decided upon a cartridge for the automatic which they consider ample in energy, stopping powers and velocity, for the requirements of the service. This cartridge is not more powerful than some of the black powder loads of corresponding caliber regularly used in the revolver. Will my critic please give his opinion as to why the ordnance officers, knowing this, still persist in their efforts to displace the revolver with an automatic? It has been proved by both types of pistol that the .45 caliber is large enough if the

pistol failed by breaking a spring at the twenty-first shot. Any man who is sufficiently skilled in the use of the automatic to give a public exhibition must have had considerable experience in their use. It would be interesting to know just how many springs Major Haines has broken during his years of training.

'Tis true that automatic arms are functioned more rapidly than those operated by hand, and theoretically at least, the strains so suddenly



applied should cause more failures than in the slower working mechanisms. I am, however of the opinion that the standard of material, workmanship and temper, as represented in automatic arms is of a quality that will meet the most exacting conditions of any service. I have a Winchester 22 caliber automatic that has been fired over fifty thousand shots without a break-down of any kind, and it is still in commission. I have also a .35 caliber and a .351 Winchester which I have used almost daily, for snap shooting, for over two years without a single failure. My Colt .38 caliber pocket model automatic in use for five years without a breakdown. It has jammed three times with me while using soft nosed bullets, but never while using full mantle bullets. During the same time I applied a hammer spring to a .22 caliber Smith & Wesson single shot pistol, a bolt and sear spring to a Bisley Model Colt, a hammer spring

altruistic motives in warning the public of the unreliability of the automatic. I believe him to be sincere in his motives and truthful in his statements, but would suggest that he extend his altruistic missionary work to include the revolver shooting contingent as they seem to be in the greatest danger. The revolver, as represented by the product of the two great armorers of America is, undeniably, the most perfect one-hand gun ever developed in any country, and for certain lines of work it at present has no equal, but unfortunately the mechanical principle upon which it is constructed has certain limitations which prevent further development. The exigencies of military service demands in all its fire arms, ample power, the utmost rapidity of fire, economy in weight and space, and convenient refilling appliances for the magazine, so that the firing may be continued to meet any emergency of the service. The auto-



A Colt .38 cal. Automatic Pistol Pocket Model. This is one of the very best of some 15 different makes of automatic pistols now being manufactured. I believe it possible to combine the best features of the revolver and the automatic type and produce a correctly balanced, a beautiful and a perfectly working arm.

and three ejector springs to a .22 caliber model 1897 Marlin rifle and a sear spring to a Winchester pump. No gun should be condemned on account of the breaking of a spring or any minor part. No one can foretell the life of a spring of any kind, but there are armorers in America who will guarantee their hammer springs for twenty thousand shots. After citing several instances of revolvers having exploded in the hands of their users in which, fortunately, no one was injured, my critic says: "I am not convinced of the tremendous personal danger to the shooters when firing unusual loads in the ordinary way, etc." I hope it will not be necessary to kill or mutilate any of our gun loving friends to convince my critic that the very best makes of the six-shooter has a safety limit. The automatic has been accused of many things, but never of turning on its friends. My critic claims that he was actuated largely by

automatic possesses these great advantages and it can be further developed along these lines if necessary. Smokeless powder has shown the limitations of all arms originally built for black powder, by compelling cartridge makers to adapt a line of cartridges to the black powder arms. With some brands of smokeless powder it is possible to develop twice or nearly three times the energy in half the chamber space required by black powder. This permits of considerable reduction in the weight and bulk of new arms as the long heavy, bulky receivers are not necessary. It is evident that for reasons before stated the military revolver of large caliber cannot share these advantages as to be a serviceable short range arm it must have the caliber. My critic says that "The automatic pistol seems to inoculate its advocates with a most astounding disregard for the truth." The too evident prejudice of my critic against the automatic is the only excuse that can be offered for that remark. If the automatic is as bad as my critic would have us believe John M. Browning should be sent to a sanitarium; the Colt Company, which for 75 years has given the world its standard pistols, should be closed up and prosecuted for obtaining money under false pretense, and some sort of guardianship should be arranged for our staff officers of the regular army who, although they have devoted their lives to the science of gunnery and ballistics, don't know the requirements of a service pistol. It might be well also to tell all of the military powers of Europe that they have made an unpardonable blunder



in adopting the various models of the automatic pistol. Maxim, Bergman, Luger, Mannlicher, Roth, Dreyse, Webly, Scott, Pieper, Clement, Browning, Mauser and all the other celebrated inventors should have told these unsophisticated ordnance officers that the automatic of any type "would jam and break down" just as often and cheerfully in action as while being tested by the ordnance board. During the past five years I have spent some time in what is known as the Black Belt and I have learned that a majority of the citizensthere are armed with and prefer the automatic pistol to the revolver. This is also true of the feudists of Kentucky. While in Little Rock, Arkansas, a young man borrowed my .38 Colt Pocket Model

automatic to help hunt down a black fiend who had assaulted a mother and daughter in their own home. The citizens got the "nigger," my pistol was returned and I heard no complaints from either side on account of guns jamming. The automatic is growing in favor everywhere, as arms that are up to military requirements are sure to do. It is not as my critic says "a joke," nor will it have any serious consequences except to the man who is unfortunate enough to get in the line of its fire. The automatic pistol is susceptible of great improvement. It may be made to possess all the good points of the Colt's single action revolver and in addition all the advantages of the automatic. Let us stand for progress, not prejudice.

## THE BAYARD SEMI-AUTOMATIC RIFLE

A dainty little single shot rifle of foreign make has just been placed on the market in this country. It is known as the Bayard Semi-Automatic and, as the cut will show, it is admirably calculated to catch the longing eye of every American boy who loves the freedom of the open and the odor of gunpowder. "The Bayard," although an imported arm and sold at a comparatively low price, is not a cheap, worthless affair like the old Flobert rifles with which our country was formerly flooded. The rifle is a bolt action, and as its name implies, is semi-automatic. It is operated as follows:

mechanism is extremely simple; there are no loose parts to drop out and become lost and nothing is exposed. The barrel is 19 inches long and is beautifully tapered from receiver to muzzle. The stock is of an excellent quality of black walnut, 13½ inches long, has a well-turned pistol grip, stock and fore-end are both checked in conventional pattern and well finished in oil. Other features that will appeal to canoeists, campers, fishermen, etc., is the fact that the rifle is a take-down and can be packed in half its own length. It is also equipped with swivels for a light sling,



Pull the bolt to the rear until the loading part is open, and the bolt is held by the breech block catch. Drop a single cartridge into the loading part, and press the button of the breech block catch. This permits the breech block to fly forward, closing the breech, and leaving the hammer cocked. When the shot is fired the breech bolt is driven back, until again caught by the breech block stop, carrying the empty shell with it, cocking the mechanism and leaving the loading part open as before. A neat and convenient safety provides for locking the hammer when cocked. The

so that it may be carried conveniently permitting the free use of both hands. It is equipped with plain open sights but the rear sight has a screw adjustment, making possible slight changes in elevation. The arm is easily cleaned—an admirable breech system allows the bolt to be removed without the use of tools, for cleaning and inspection. The use of smokeless cartridges is recommended by the manufacturers of the rifle. It is intended for .22 short R. F., but will shoot .22 long. The Bayard rifle is now on sale by the John Meunier Gun Co., 272 West Water Street, Milwaukee.



# THE .22 RIFLE FOR SMALL GAME

By ADOLPH TOPPERWEIN

THERE is hardly any one who has not at some time possessed or shot the .22 caliber single shot or repeating rifle, either for amusement at a target or in the woods at small game, etc., for with the vast number of .22 caliber rifles on the market today it is within the reach of any one, be he the boy from the country or the sportsman from the city. No sportsman's outfit is complete without one, and although the accuracy of the .22 caliber cartridge is a well known and established fact, the general possibilities as to its penetration, killing powers and range is a subject little understood by the average shooter. Most people look upon this little arm as a mere plaything or toy, when in fact a .22 caliber rifle with its little cartridge, loaded with three grains of powder and a bullet of thirty grains, is, perhaps, the most wonderful of our American made guns.

The Flobert and Pieper rifles, with their fancy carved stocks and trigger guard, were among the early products of the .22 family. Some of these rifles were not even rifled, and while they were good enough in a way the Stevens, Remington and Winchester single shot rifles, with accurate rifling soon took their places, and while the above mentioned arms still hold their own and can be found today in any sporting goods store, just like they were twenty-five years ago, with the exception of the Stevens, which from the old "tip up" action was later transformed into a lever action, later years have made wonderful improvements in fire arms, and the .22 caliber rifle has grown from the old smooth bore single shot to the finely rifled repeater and even more wonderful, automatic. In my many years of shooting experience I have used about every make of .22 caliber rifle, not only for work at target shooting but for hunting, and during a period of some ten or twelve years a .22 caliber Model 1890 Winchester repeater was my only weapon for small game.

During this time I killed every thing from an English sparrow to a full grown Texas steer, using a .22 cartridge. All of our modern .22 caliber rifles are chambered for various sizes of cartridges, .22 short, .22 long and .22 long rifle, and the most powerful, the .22 automatic and .22 W. R. F. However, I am speaking strictly only of the possibilities of the .22 short cartridge, especially the .22 short smokeless with the greaseless bullet. I call to mind some remarkable shots which may interest readers of Outer's Book and illustrate what a wonderful weapon the modern .22 rifle really is. To begin with, I do not wish to impress the idea that a .22 caliber rifle is the best arm to use on deer, turkey or bear, nor do I wish to say that a .22 caliber bullet will kill any of the above animals every time, as this cartridge was not intended by its makers to kill big game or for long range work, but for shooting at ranges from

twenty-five to possibly fifty yards, and to make shots at extremely long ranges you must combine luck with skill. However, the incidents I am about to relate simply demonstrate what really can be done at long ranges, and show the remarkable execution of the .22 caliber when put in the right spot. For shooting small game, such as birds, squirrels, rabbits, etc., the .22 caliber bullet is a good killer, makes a neat clean hole and does not mutilate game like a charge from a shotgun or larger caliber rifle, besides it affords the shooter greater sport and the ammunition is much cheaper than that of either shotgun or larger caliber rifles. Not only that, but you certainly get more satisfaction by killing a bird sitting on a limb fifty or seventy-five yards away with a bullet, or a squirrel up on the highest limb of a tree, than by bowling him down with a 12 gauge shotgun loaded with an ounce of No. 6 shot.

Of course the average shooter may kill more game with the shotgun, but the real sportsman does not go out just to kill. He wants some fun and pleasure, and even if you do sometimes have to shoot three or four times at your squirrel before your little bullet hits its mark, the three or four .22's you sent up there do not cost as much as one load out of your shotgun. Besides look at all the fun and practice you are having. A good shot with a .22 caliber rifle can get his game with little effort and with less cost than the man who uses the shotgun.

Down in Texas, dove shooting is great sport and I have often shot my limit (25) in a few hours shooting my birds at a tank (watering place for cattle) and killing them on the opposite bank of the water hole as they came for water, the distance as a rule, being from twenty-five to seventy-five yards. I saw a friend of mine once, while out hunting, kill a dove from the top of a dry sycamore tree with his second shot at a distance of 235 steps, using the .22 short smokeless cartridge, and I have time and time again killed these birds at ranges from 100 to 150 and 175 yards. Of course shots like these are called luck shots, and while there is, no doubt, a great element of luck in shooting of this nature, it clearly demonstrates that the .22 will do good work if held in the right place. I once killed a chicken hawk at fully 300 yards getting him with the fifth shot.

At Port Lavaca, Texas, I killed a turkey buzzard on the wing using my .22 caliber Winchester. It was a quartering shot and the bird dropped to the ground, just 185 steps from where I stood. I have killed hundreds of jack rabbits, prairie dogs, and have made some remarkable long shots. I remember a little instance which happened while I was traveling in Western Texas where I was shooting exhibitions at the time. After shooting one day at one of these little western



towns, I met a gentleman who was quite an enthusiastic rifle shot and was the owner of a Model 1890 Winchester, chambered for the .22 W. R. F. cartridge, which he used mostly on jack rabbits which were plentiful in that section. He was very anxious to see what I could do on game with my .22 short, being rather skeptical as to its killing powers. We secured a team and started out just before sundown. After getting a mile out of town we saw the first Jack, which my friend neatly knocked over, shooting out of the buggy at about sixty yards. He repeated the trick a few minutes after at about the same distance. The next rabbit we sighted jumped out of a clump of prickly pears and started off at a mile a minute clip until he reached a point fully 125 yards away, when he stopped. I overshot him the first shot and downed him with a neck shot at my second attempt. As we were about to pick the rabbit up, we jumped one out of some bunch grass. We both fired almost together, which only made the rabbit go faster, and a slight depression in the ground soon lost him to view, until we sighted him again to our right fully 250 yards away. Thinking this a good chance to demonstrate my little .22 I aimed carefully and much to my disappointment scored a miss, shooting a bit low. Before I could fire again my game was off at full tilt. Unfortunately a clump of thick mesquit prevented me shooting until we saw him running at what I thought about 325 yards away. I fired three shots in rapid succession and each time a little puff of white dust told the tale of shooting too far behind. At my fourth shot, however, the Jack doubled up, turned completely over and lay still. After shaking hands with me on my good shot, my friend stepped off the distance—361 steps. We returned to town with nine rabbits (which we donated to a Mexican family), my friend fully convinced that the .22 short was good enough, at least for Jack rabbits. There is a saying out west that you cannot kill a prairie dog dead in his tracks, and that the dog

always gets into his hole after being shot. This is true to a certain extent, and easily explained when it is known that the prairie dog is a little animal with a lot of vitality and jumps about when shot, like a chicken with its head cut off, and it is then that he generally finds his hole, or that of his neighbors, and falls down and out of sight. However, if you give him a brain or heart shot, he forgets to jump much and I have killed hundreds of the little fellows with the .22, and picked most of them up outside of the hole.

While spending a few days on a ranch of some relatives a few years ago, I killed an outlaw steer with a single shot from my .22 repeater. I know of a party living close to San Antonio, Texas, who, while shooting doves at a tank, killed a seven point buck at a distance of twenty-five yards, shooting the animal through the head, and killing it dead in its tracks.

Another party, while out hunting with a .22, killed a four-point buck at sixty yards, shooting the animal through the shoulders. This deer ran about 200 yards before dropping dead. There are numerous .22 caliber rifle clubs in South-west Texas, generally composed of German farmers. These men shoot various assortments of .22 single shot rifles equipped with plain open sights, shooting mostly the .22 short cartridge. The ranges are either fifty or one hundred yards and I have seen some remarkable good scores made at these shoots.

I once attended a country prize shoot accidentally. The shooting was at 200 yards, and the shooters were using a number of different guns—.44 repeaters, 32-40 and 38-55 single shots, with a few 30-30 rifles mixed in. I had been shooting mud turtles at a creek near by and had with me my .22 repeater. Being invited to participate in the prize events I did so, and after a few trial shots to get my elevation, etc., I began my string of ten shots, winning fourth place much to the surprise of those present.

## WANTED—A .22 CALIBER PISTOL

### A FEW REASONS

**S**UPPLEMENTARY evidence as to the growing demand for a high grade .22 caliber pistol continues to reach us. A most significant item, is the report that a regiment of United States Cavalry has purchased a number of .22 caliber revolvers for use in the training of its troopers. This is a wise move and the idea should be extended to cover every branch of the service. The principle of practical pistol shooting is the same whether it be conducted with a .22 or a .45 caliber, with a .38-ounce weapon, or one weighing but 25 ounces. Considering the present price of ammunition of any size from .25 caliber up, the use of the .22 is obligatory if one wishes to practice sufficient to become an expert in the method of shooting that makes the pistol most effective. If men are restricted to a stingy dribble of ammunition which

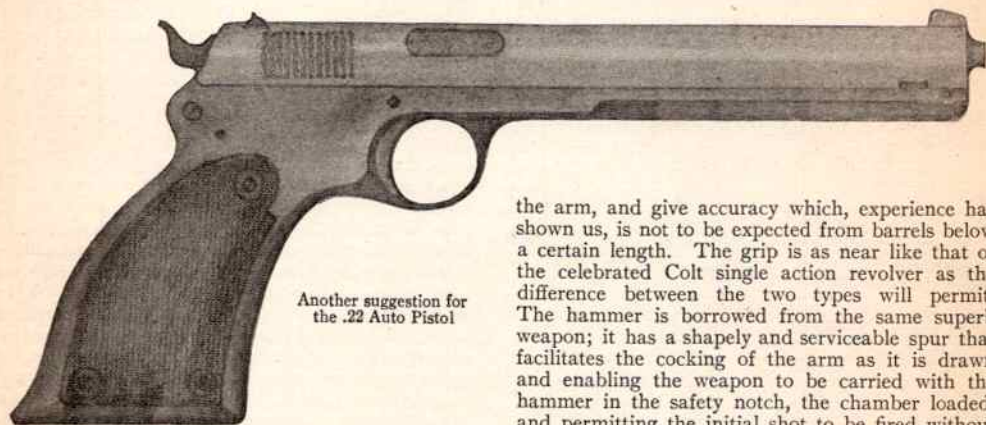
they know is insufficient to make them even fairly good shots, they will quickly lose interest and loaf through their target practice in a perfunctory manner. If, however, they know that there is an ample supply of cartridges available, their interest will soon be made manifest in various ways. Without an appropriate weapon it would be worse than useless to attempt to popularize the sport of pistol shooting with the .22 caliber. 'Tis true, we have excellent single shot pistols in that caliber, but they are too slow for quick thinking, action loving, machinery-mad people like Americans. Evidence is not wanting to prove that all fire arms of the near future will be self-functioned and perfected to a degree never anticipated by domestic manufacturers. It is not to be expected that sportsmen who shoot automatic arms on the rifle range, at the trap



in the game field, and in the shooting gallery, will be satisfied with a single shot pistol, or a slow-loading, gas-leaking revolver with a limited number of shots. It is extremely doubtful if an arm of the revolver type could ever be made to work satisfactorily in a caliber as small as the .22. In arms of larger bore the loss of energy would be less noticeable than in the smaller caliber of limited power, where the energy is all needed. Then there is the ever present difficulty of making the revolver mechanically perfect so that there is a perfect alignment of cylinder and barrel. For reasons of economy, and safety in thickly settled communities, small caliber weapons are naturally used oftener and shot more than larger ones and therefore the wear on them is greater. On an arm having so many friction points and wearing surfaces as the revolver, all dependent upon each other to ensure proper alignment of the bore, the element of wear cannot be ignored. It is a peculiarity of weapons

for a successful revolver in that caliber. None of the armorers have as yet been able to produce one, although their single shot pistols in .22 caliber are all that could reasonably be wished for, lacking but the one important feature which Americans have been educated to, viz., speed of fire. The principle of the automatic as exemplified in the Colt-Browning system offers us a solution of the whole problem and at the same time opens a way to a more scientific study of the pistol with a view to its improvement in mechanical detail, balance, and ballistic requirements.

The cut which accompanies the text shows what may be done in the way of concession to the ideas of practical men. There is not a single feature embodied in the arm as illustrated, that has not been tried out in the most practical tests and in the crucible of experience. In the arm as represented we aim to have weight in proportion to the caliber, with a barrel of sufficient length to properly balance



Another suggestion for  
the .22 Auto Pistol

of the revolver type that all of the friction points alluded to are small and must be absolutely perfect to insure accuracy. The notches of the ratchet that actuates the cylinder, the point of the pawl that engages the ratchet, the bolt that locks the cylinder in position for firing, and the stop notches that check the momentum of the cylinder and engage the end of the bolt are all friction points of exceeding limited bearing surfaces, any one of which failing, would result in impaired accuracy caused by shaved bullets. Compared with the revolver system the automatic possesses many advantages of principle and construction. Economy of space seems to be the most striking general feature but not less remarkable is its marvelous capacity for rapid and sustained fire, the facility with which an exhausted clip may be removed and a loaded one substituted with either hand without focusing one's entire attention on the performance, is an advantage that will be appreciated by every one, but more especially by those who are called upon to use their hand guns in uncertain lights or dangerous encounters. Military men have been quick to note these points of superiority in automatic pistols, and it is usually safe to follow their lead in the selection of a gun for hard or dangerous service. Our object in asking for a .22 automatic pistol is primarily to meet the demand that has long existed

the arm, and give accuracy which, experience has shown us, is not to be expected from barrels below a certain length. The grip is as near like that of the celebrated Colt single action revolver as the difference between the two types will permit. The hammer is borrowed from the same superb weapon; it has a shapely and serviceable spur that facilitates the cocking of the arm as it is drawn and enabling the weapon to be carried with the hammer in the safety notch, the chamber loaded, and permitting the initial shot to be fired without the use of both hands, and with a speed equal to the succeeding shots which are functioned automatically. The grip is set at a correct angle with relation to the barrel, so that when the pistol is hurriedly aimed the barrel will swing quickly and naturally into the line of sight. With such an arm one may shoot intuitively which is a great advantage in a short range encounter. No provision is made for any form of the microscopic safety appliances that encumber and disfigure many of our finest makes of pistols. We want no form of safety that requires an extra thought or movement on the part of the shooter, or will cause a fumble with cold or gloved hands in zero weather. With every type of the revolver, whether it be a double or single action system, it requires a certain amount of skill to safely and quickly cock and fire the weapon with the thumb and fore finger. This skill must, of course, be acquired. With the automatic the reverse is true, it being self-functioned no preliminary training in manipulation is necessary. Thus that exceedingly variable quantity known as personal equation is almost entirely eliminated as a speed factor, a thing impossible with hand functioned weapons. The speed of fire is therefore limited only by the co-ordination of brain and hand of the individual. We expect to meet some opposition in our little crusade for a weapon that every man who knows the fascination



of free hand pistol shooting wants. The opposition will not all come from the people of a single idea. Much of it will come from that, fortunately limited, number of people who, having a weapon of the type adapted to their needs, cannot conceive how it would be possible for others to want something different. We are willing to hear the adverse criticisms if based on logic or proof. To be truly progressive we should be receptive, and ready at all times to listen to the other fellow, to weigh his arguments fairly and logically; we may in this way learn something new or what is equally important sometimes, we may learn what to avoid. We should divest ourselves of everything like prejudice and intolerance.

### A SPUR OR A HUMP

EDITOR GUN DEPARTMENT: Reading "Some Reflections" on the .22 Auto pistol subject in the October Outer's Book, and examining the sketch of the proposed gun, or suggestion of it, it occurs to me that the full fledged spur on the hammer is not just the thing, but that the spur and hammer, if it seems to be desirable at all, should be reduced to a mere cocking projection, similar to the .38 Colt auto or contained well within the rear frame like the Savage auto. There is a likelihood that this suggested sketch as it stands would tend to settle in the hand (some hands, we will say) and this long spur catch the flesh between the forefinger and thumb when the hammer comes back in firing. Anyone who has had their knuckle skinned by a Mauser auto knows that this is done instantly and thoroughly if the careless knuckle gets in the way. If the full hammer and spur are thought desirable, I would suggest "hump" on the grip to prevent this settling in the hand. This hump is shown in both the Colt and Luger auto models, though in exaggerated form, but there is a wonderfully comfortable "feel" to both those pistols in the hand, because this projection is there, and does not necessitate the firm grip that the smooth backed, rounded top does. Both the Colt and Luger, the latter particularly, will rest on the top of the thumb and forefinger in firing position, and this without the slightest effort toward grip, other than to support the weight of the pistol.

A previous article stated that the mass of metal extending over the rear of the grip was undesirable, and might better be placed in the barrel for muzzle weight. Perhaps there might better be more

muzzle weight in some pistols, but I like this weight in the rear also. Moreover, in the auto pistols, there is not the amount of jump that there is in the revolver, due to the entire thrust being taken up in the hand and arm, instead of by the recoil springs in the auto, where the thrust is directly (nearly) backward and very little upward. My personal experience is, that the Savage and Colt .32 caliber autos jump at the muzzle considerably, while the Mauser and Luger jump very little indeed, therefore I still hold that the point of grip in the auto pistol (or any other for that matter), should be where the center line of the grip strikes the balancing point of barrel and receiver, this perhaps to be modified to suit the caliber or design.

A previous correspondent has also suggested that the long rifle cartridge be used for the auto cartridge. This is very undesirable, for the pistol would be calibrated to operate with a certain strength of cartridge, and every one knows that the various makes are not alike in strength, though each make accurate by itself. Also the bullet is not crimped, allowing bullet and shell to separate in magazine or pocket, and too separable to resist the operation of the mechanism and magazine springs, and too long and straight sided to load and extract with the certainty of the short, slightly bottled, and uniformly loaded Winchester .22 auto cartridge. Every little one-horse country store carries long rifle cartridges, good, bad and what not, and it would only make trouble to undertake to use them. On the new .22 auto, I would like to see the sights put in slots, allowing for adjustment to the individual. A small design of sights is now obtainable so that the cumbersome rifle sights need not be used. This, with other minor points, is easily introduced. I think that it would be necessary to make the receiver section of the proposed sketch longer, in order to give proper bearing to the sliding (assumed to be) breech block. This would not affect the general design however. Above all, do not overlook the "comfy" grip. When a pistol fits the hand, it eliminates one thing from those you do have to remember when shooting. Some guns never fit the hand the same twice in succession, resulting in good groups perhaps, but a series of groups all placed differently on the target.

Some of you like speed, and have .25-35 rifles, try 23 or 24 grains Lightning powder behind the 25-20-86 metal patched bullet, using a grain of dry, flour graphite loose in the shell with the powder.

Yours truly,

H. B. JOHNSON.







THE NEW SJOGREN GUN

## A NEW IDEA IN SELF-LOADING ARMS

By EDWARD C. CROSSMAN

*(Editor's Note—It is but fair to Mr. Crossman to state that this article was submitted by him and accepted by us some months ago, several weeks before a similar article appeared in another magazine.)*

**S**OLOMON may have been right when he stated that there was nothing new under the sun. If he was, then it has taken our gun makers an unconscionably long time to apply principles, apparently known to the wise Hebrew, to the firearms of the world.

For seven hundred years our progenitors—at least the firearms using branch of the family, placed their shoulders against the butts of their guns and cheerfully submitted to the vicious punch with which the gun rewarded their confidence. They might have been shooting at game, at target, or merely trying to keep down the surplus population. They were interested in the accuracy of their weapons from the first, then the matter of a better way to ignite the charge began to occupy their attention. Quicker methods of getting in a second shot—in case the part of the surplus population with which they were engaged, refused to stay dead—were next in line, after a reasonably quick method of igniting the powder in the gun had been found. But still nobody thought about the inevitable kick of the gun, except perhaps with reviling and the hearty wish that it were condemned to eternal purgatory, already bulging with the things which mankind have consigned there—in thought and word, at least. The thoughts of taming this kick and making it work for them, as our ancestors tamed wild horses and compelled them to servitude, apparently never entered the heads of the early gun users.

With the arrival of the repeating rifle and shot-gun, using fixed ammunition, progress in firearms construction—excepting slight refinement in details—appeared to be at a standstill. But—that kick still remained. An age so resourceful that it found a use for about every sort of by-product formerly considered useless, would hardly overlook the power wasted in driving the gun back against the user's shoulder.

It wasn't that the kick was so unbearable, it was simply the same spirit of economy that invented a use for waste coal tar products, for cotton seed, for the blood of the slaughtered animals in our stockyards and which even hated to see a brook babble among the stones of its bed instead of being compelled to run down a dark flume and turn various turbines before being allowed to pass.

The question was, what to do with this power.

It could not be applied behind the bullet, it couldn't be used to turn a dynamo or run a grindstone. The brilliant thought, the gun had to be reloaded, occurred at last and the rest was easy, the automatic—self-loading arm was with us. Another one of Solomon's old things had been disinterred.

On the market at present, are two well known, distinct types of self-loading mechanism as applied to sporting arms and two more plans as applied to the automatic machine guns used in our army and navy. In the automatic machine guns one type uses the recoil and some of the gases rushing forth from the muzzle to operate a moveable breech block which in its motion cocked the firing mechanism, disposed of the empty shell and placed a new one in the chamber. The other type utilizes some of the gases of the explosion, stealing them through a hole bored in the barrel part way to the muzzle compelling them to press down a lever or push back a piston.

In the sporting arms—"self-loaders," not automatics—there are also two distinct types, but both of them depend upon the recoil or backward pressure of the gases to operate their mechanism. Both of them are objectionable, from a theoretical standpoint.

One of them, the older type and the best known, keeps the breech bolt and the barrel locked firmly together but permits both bolt and barrel to slide backward under the blow of the explosion. They are prevented from sliding too enthusiastically by a strong spiral spring, one end butting against the back end of the bolt and the other fastened in the stock. The barrel is also attached to another coil spring, fastened firmly to the barrel a few inches from the breech, sliding along the magazine tube under the barrel and its rear end butting against the receiver. Thus when the barrel and bolt were at their extreme rearmost position, they had compressed two springs, one of them pushing against the bolt and the other trying to throw the barrel forward to its normal position. The bolt is unlocked from the barrel at this point, the barrel driven emphatically back to its forward position, while the bolt is left in its rearward position. The bolt having previously taken a firm grip of the collar of the shell by its extractor, when the barrel went, forward the shell was left to the tender mercies of the bolt and it is promptly kicked out



of the gun in the separating process. A new cartridge from the magazine under the barrel, tripping the catch holding the bolt, its spring drives it forward against the barrel and the locking bolt fastens it firmly in place, behind the new shell.

This plan of mechanism works well with shot-guns but when the makers attempted to apply it to the rifle, a cumbersome, bulky, clumsy, ugly weapon was the result. Not wishing to have the barrel and sights move back with the recoil, they paced a separate cover over the real barrel and attached the sights to the cover. This tends to make the rifle inaccurate and makes it as hideous a beast of an arm as can be turned out. It is hard to take down and assemble and as mean to handle as it is ugly in appearance. A great, homely door-knob protrudes from the side of the bolt like a sore thumb, assisting in the general effect.

The other plan is applied only to rifles and is more objectionable than the first one mentioned. This scheme ignores the necessity for locking the bolt in place until the explosion is over, but depends simply upon a heavy bolt held in contact with the head of the cartridge by a spring, to keep the barrel closed until the bullet and gases have left it. The makers have wisely confined themselves to weaker cartridges in this arm. The bolt is driven away from the base of the cartridge by the explosion, allowing the cartridge to blow partly out of the chamber before the pressure is all over. The cartridge is made much heavier around the head and for one-quarter inch forward to take this extra pressure. The bolt, driven back by the blow of the explosion, cocks the hammer, ejects the empty cartridge and allows a new one to be placed in front of it by the magazine spring. On going forward the new cartridge is pushing into the chamber and the bolt is again held up to the base of the cartridge by the spring.

This is manifestly a makeshift style of mechanism, opposed to the best theories of gun making and only safe as long as nothing unexpected happens. An increase in the powder charge, running up the breech pressures to a dangerous degree or an obstruction in the barrel would not result pleasantly with a rifle of this type.

A new plan of self-loading mechanism, invented by a Swede, and called after him, the "Sjogren system," seems to be the nearest to perfection in the self-loading type of fire arms. Tests made in England of his mechanism, applied both to the shotgun and the rifle, have proven it to be well nigh perfect and the English Government is experimenting with a rifle of this type, with a view to its possible adaption to military use.

In this new plan of mechanism, instead of using the recoil to push directly back on a locked bolt and barrel, or using it to simply push a bolt away from the barrel, the bolt is locked solidly and the inertia of a heavy, sliding "breech bolt cover," sliding freely on the guides on the receiver, is used.

The arm is built with an ordinary breech bolt of the Browning class, but having a striker, and circular main spring of the bolt type of rifles. Back of the bolt and fitting snugly over the rear of the bolt itself, is another heavy piece of steel, called the "Breech bolt cover." This slides freely on its guiding ribs on the sides of the receiver and it is not fastened to the bolt itself, except through the recoil spring.

When the rifle is fired, the bolt itself is locked solidly to the barrel and recoils with the gun. The bolt cover, being heavy and free to slide, through its *inertia* does *not* move back under the recoil with the rest of the gun but remains still. The gun actually *slides* under this breech bolt cover but it *apparently* lurches forward against the back of the bolt. It is on the same principle as placing a small board on a larger one and striking the one underneath a heavy blow. The board struck will move under the influence of the blow but the board above will remain still, the lower one sliding under it. Its inertia prevents it from moving back with the lower board.

Actually the bolt recoiling with the gun, is brought forcibly against the motionless bolt cover. It amounts to the same thing as though the gun has remained still and the heavy bolt cover had been forced forward against the bolt. Between the bolt and this heavy bolt cover is a spiral spring, called the "Recoil spring." There is also the main spring, working on the firing pin, running through both the bolt and the bolt cover. When the bolt, through the motion of the recoil is brought back against this massive bolt cover, the recoil spring is compressed and takes up the shock of the blow. The main spring on the firing pin is also compressed and the firing pin cocked. Thus we have the bolt cover motionless and the bolt brought back with the rifle, jammed firmly against the heavy cover with the two compressed springs between the bolt and the cover. The recoil partly over, the compressed spring of the bolt thrusts the breech cover backwards until its forward movement has ceased and it is moving backward with the rest of the gun. In its backward movement it unlocks the bolt and takes the bolt with it, the two sliding back under the remaining influence of the recoil. In their motion backward a closing spring is compressed, similar to the retractor spring on other types of self-loading arms. The backward motion of the bolt and its cover is stopped by a steel piece at the rear end of the receiver, supported by a spring and acting as a buffer. If there is a cartridge in the magazine, the trip is sprung as in the Browning type of gun and the bolt with its cover are allowed to go forward under the pressure of the returning spring. The empty shell has been extracted and ejected when the bolt and barrel parted company and the new shell is forced into the chamber as in the other automatic types. The cover is forced back from the bolt by the recoil spring and it is again ready to stand still and take the blow of the recoiling rifle against itself.

A safer type of breech mechanism would be hard to find—of the automatic breed at least. Experiments have repeatedly proven that the recoil of a gun does not commence—through the inertia of the gun itself, until the projectile is nearly to the muzzle. In the Sjogren system, the spring between the cover and the bolt is not compressed at all until the recoil is well under way and the bolt cover has to apparently move forward and then backward under the thrust of the spring before the bolt is unlocked from the barrel. The bolt is locked even longer than the Browning type and the projectile and gases have left the barrel long before the bolt has parted company with the fixed barrel. The gun *must* recoil against the bolt cover and the spring must again push the cover backward before the



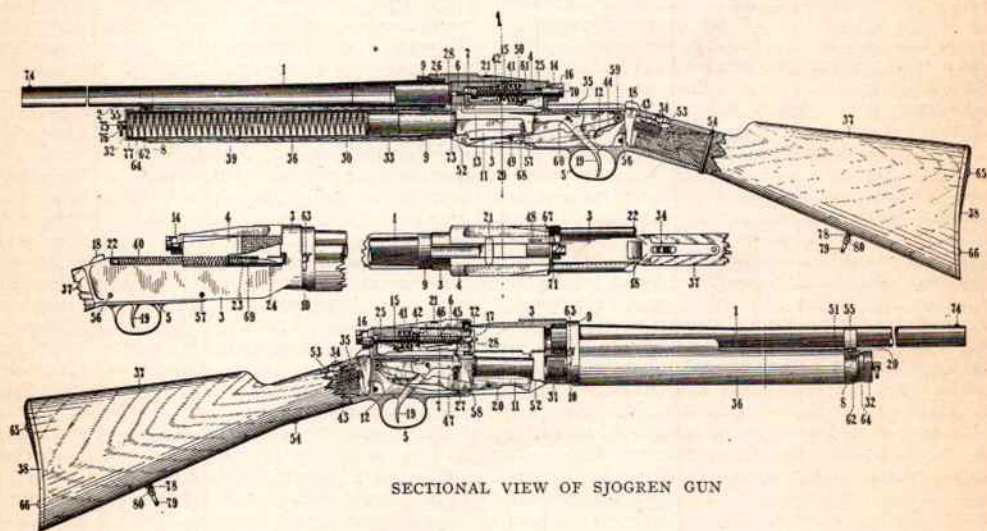
bolt is unlocked, thus preventing any premature opening of the breech or any danger. Heavy loads or obstruction in the barrel would have no effect on the gun—as far as the breech mechanism is concerned for the heavier the recoil, the harder the bolt is brought back against the cover—or the harder the cover is apparently brought forward against the bolt. Thus the heavier the recoil, the longer it would take for the cover to start back again and unlock the bolt. For this reason the heaviest type of cartridges can be used safely as the safety of the bolt depends simply upon the strength of the locking lugs—the automatic mechanism does not have anything to do with the strain of the explosion.

Reduction of recoil is an advantage claimed by nearly all makers of self-loading arms, but the users of arms of this type agree that this reduction is not noticeable. It is changed in character by some arms, from a blow to more of a push, but the difference is not noticeable. With the Sjogren, there is an actual reduction in the recoil of the arm.

"guts," the works of their gun, but the Sjogren bolt and bolt cover are left exposed to the gaze of the curious—and the dust and dirt of the open air. The gun looks distinctly unfinished, the bolt and cover, crude and uncouth, and the rear end of the receiver, forming the patch on which slides the bolt, left bare and raw looking. If a Browning gun had the whole top of the receiver sawed off for its entire length, it would look much like this Sjogren, except, of course, there are no small or exposed parts on the foreign gun. The receiver, from stock to barrel is extremely long, probably nearer nine inches than six. The gun would certainly be awarded the prize for ugly guns by a jury of unprejudiced gun makers, although the Browning autoloading rifle would give it a close run for its money.

The finish is very good as turned out by the English makers but then, they get some \$60.00 for the gun.

Our own type of autoloading shotgun is good enough for those who like the beasts but it is as a



SECTIONAL VIEW OF SJOGREN GUN

The "kick" of the gun is softened and absorbed materially by the heavy bolt cover, against which the bolt is brought, while the absence of "slam" and vibration, from the return of a heavy barrel that takes place with the Browning type, makes the gun much more pleasant to use. However, these are more "Talking points" than any actual advantages. The average man, shooting a rifle at game or a shotgun at birds, never knows anything about recoil. Trap work or target shooting is of course different.

In appearance the gun is extremely homely, although the makers, in common with all other manufacturers of self-loading arms, claim that their type of gun has Venus backed off the map for graceful curves and beautiful lines. It looks more like the Browning type of shotgun than anything else, receiver, fore-end and all but it looks as though some one had sawed off the back of the receiver about half way to the bottom. The makers of the Browning gun had the decency to cover up the

rifle that the foreign invention is particularly valuable. We have not a single desirable type of self-loading rifle at present, the objections against the ones now on the market are too serious to be overlooked. Either a lack of safety or else a cumbersome, complicated ugly arm that the rifle lover cannot stomach. The foreigner is no beauty but it will be made without the extra cover which makes our American breed so ugly. In the Sjogren mechanism applied to the rifle, the makers use the Browning plan of a box magazine instead of the tubular one under the barrel. The locking lugs are vertical and of a stronger type than those in the shotgun. The collar of the firing pin acts as a supplementary lock when the rifle is fired.

The new arm takes down more easily than any self-loading arm made. The plan of the Winchester repeating shotgun has been adopted, simply pressing in a button at the end of the magazine, turning the knob a quarter of a turn, drawing out the magazine and then giving the barrel a quarter of



a turn, being all that is necessary to take down the gun. This is a great advantage on the take-down system of the Browning type of shotgun and a still greater one over the Browning rifle take down scheme.

The military authorities of all the civilized nations are investigating along the line of automatic firearms. Automatic machine guns have been used for years, certain nations have adopted automatic pistols for their army and navy; a certain German regiment is armed entirely with automatic rifles for experiment; the French authorities are working along this line; the United States has experimented thoroughly with the Bennet-Mercie both as machine gun and automatic rifle, and the English military authorities have taken up this new invention with a view to discovering its usefulness for military purposes. For this purpose it is ahead of any arm that has yet put in an appearance, although of course it is of the "self-loading" type and not a true automatic, as the trigger has to be pulled for each shot.

The Sjogren gun has a cocking piece in the rear of the bolt cover, not unlike the safety on a Mauser or a Mannlicher rifle. By turning up this cocking piece one-quarter turn, the striker is cocked and in case of a miss-fire, the gun can be cocked again without opening the bolt. The gun is provided with an ordinary trigger bolting safety of the familiar double barreled hammerless type and turning this cocking piece clear up, also locks the gun against firing or opening. The cocking piece in this position projects into the line of sight, preventing the shooter from vainly tugging at his trigger, trying to fire a locked gun as is often done. Other customary safety devices, locking the firing pin against touching the cartridge, etc., are provided, and the gun is as effectually guarded against accidental or premature discharge as any arm made. It has one great advantage over our own type of auto-loading shotgun in that no adjustment has to be made for different loads and it will operate whether light or heavy loads be used. With the Browning type, there is an adjustable friction ring on the magazine tube, the pressure of which can be increased or decreased according to the loads used. The writer using one of these weapons frequently had the gun fail to operate on account of having it adjusted for a heavy load and then using a lighter one without changing this friction device. In this case the empty shell would not be ejected but the shooter knowing nothing about it, would pull trigger the next time on an empty shell.

The Sjogren has the fault common to all self-loading shotguns and rifles, of a great number of parts and a multitude of springs, any one of which breaking, would put the gun out of commission. The Sjogren has some 70 parts in all, and 15 springs of different sorts. The Browning has 89 parts and 12 springs. A typical hammerless ejector gun of the double type has from 35 to 40 parts, with from 6 to 8 springs. To operate the gun, it is first cocked by turning up the cocking piece one-quarter of a turn and then turning it back. The safety is set at safe and the cover drawn back with the bolt to the rearmost position. A cartridge is dropped into the open breech and the carrier latch is pressed upward, allowing the bolt to close, not unlike the scheme of the Browning. The magazine is filled by pressing cartridges into the tube from the bottom of the gun, the carrier being forced out of

the way each time as in the Browning type. The firearms expert, familiar with the Browning type of automatic, cannot but be impressed with the idea, that while the Sjogren people have an entirely new idea for the bolting mechanism of their gun, yet they are indebted to old John Browning for a great many details used in their gun. The similarity is startling in some ways, but of course in the fundamental principle of their gun, they are entirely original and their plan is superior to any yet tried. The gun can be taken apart—as customary with any but American made guns—without the use of tools, except for a screw driver or similar tool used to pry out a couple of parts against which springs butt. It is necessary to use a screwdriver to take the gun apart to its most minute parts for repairs but for ordinary cleaning the bolt can be taken out without unscrewing a screw or driving out a pin. The makers have departed from the usual plan of attempting to cover up the main frictional and oiled parts from dust and grit, by leaving them open to dust, etc., but making them readily accessible also for cleaning. They hold the hypothesis that the parts are bound to become more or less grimy and dirty whether covered up more or less or not and they therefore make these frictional part easy of access and encourage the shooter to give them a hasty wiping now and then by this ease. This theory is borne out by the experience of the writer with an auto-loading shotgun. At the end of a day's shooting, either at trap or field, the breech mechanism of his Browning would be found full of grit and burnt powder and to keep the gun in good order it was necessary to dismount the parts and clean the inside of the gun thoroughly, a great nuisance as the gun was made on the usual plan of American makers—to pin or screw in every part instead of using a little ingenuity and making the parts detachable by hand. Emulation of the simplicity and ease of dismounting of the Mauser or Mannlicher mechanisms would be a good thing for American gun makers.

The gun will be made by a firm of English gun makers, under the Sjogren patents. The shotgun will be made with 28-inch barrel, weighing close to eight pounds, 12-gauge only, the specifications being those of the Browning. The rifle will be made in 7.65 caliber or .30 caliber, for regular military, high pressure cartridges. It can be loaded with a clip, like the Mauser or singly. It will be marketed in England at \$60.00, which will effectually prevent it from competing very strongly with our own Browning guns at less than half this price for the rifle, and only half for the shotgun.

While the gun is open to the objections common to all automatic arms and while the genuine gun lover, who can appreciate a fine double gun is not likely to buy one of the new Sjogrens except for curiosity, yet it is true that the Sjogren stands at present at the head of the self-loading guns for its wonderful breech mechanism.

The English people are too staunch admirers of the fine double gun to make the success of the new self-loader very probable in England. It will undoubtedly make its appearance in the United States and it remains to be seen whether by its unequalled plan of breech mechanism it can supplant the old, established Browning auto-loading guns in their own field.



# FIRE-ARMS AND AMMUNITION

By HARRY T. GILLIAND

THIS subject has been discussed of late in the Outer's Book, and many other sporting magazines, by both the professional and amateur. As I belong to the latter class of sportsmen, I submit this article with hesitancy, and for what it is worth. It being my personal opinion and experience with the arms and ammunition to which I will refer.

I have been a consistent lover of fire-arms all my life, and am familiar with most of the leading arms of American make. For hunting black bear and deer, the only large game we have in this locality (Central Pennsylvania), my preference is the 1894 Model Winchester, in .38-55 caliber. I use the Winchester high velocity cartridge with 255 grain bullet, which is quite accurate up to 250 yards in this arm. This is all that is required in a brushy, mountainous country, such as we have here, where most of the game is killed at a range of from 100 to 150 yards, and in my opinion a bullet large and heavy enough to paralyze the animal. In other words to kill quick and clean, is more desirable than the small bore, long range weapon. I know of an instance, several years ago, of a deer, after being shot through in three places, going fully a mile. The rifle used was a .32-40 caliber, with the regular factory load, black powder and lead bullet. I admire the .32-40; it is very accurate and carries up better at the longer ranges than the large bore. However, as a *game getter*, I think it is inferior to the large bore. The use of the Hoxie bullet will increase the killing power fully one-half. The chief objection to their use is the excessive cost. The makers claim that as one shot will do the work, where it sometimes takes three or four of the regular loads, that they are not as expensive in the end. They seem to overlook

the fact, however, that the game is not always hit the first shot, and that the Hoxie bullet is no more likely to score the first time than the regular.

Hoxie ammunition is put up ten cartridges to a box in the larger sizes. The cost of the .32-40 caliber is about 80 cents per box, or 8 cents each, which is rather expensive when used to tear holes in the atmosphere and mountain scenery, as sometimes happens when a bad attack of buck fever strikes the hunter.

I have used various kinds of double barrel shot-guns. My choice of the double guns I owned was an L. C. Smith. I finally disposed of this and purchased a pump gun, Model 24 C grade, 12-gauge Marlin, which cost about \$35.00. For close, hard shooting, finish and balance, it cannot be excelled by any gun of the same price, I have yet seen.

In the National Sportsman, sometime ago, was an article by Edward Crossman in which he said that American made pump guns were turned out by the thousand (like cigar boxes), and fitted with *gas pipe* barrels, or something to that effect. The barrel on my Marlin is made of special smokeless steel, with a tensile strength of 100,000 pounds to the square inch. I consider this a grade of *gas pipe*, that will stand the strain of shooting any properly loaded shell, with entire safety to the hunter.

The choice of the best gun, or rifle, is a hard matter to decide. They all have their good qualities, and it is a question of what appeals most to the fancy of the purchaser, which guides him in making a choice. I think that it is best so, for if we were all of the same opinion, it would keep some of the manufacturers very busy, while the rest would have to go out of business, for lack of orders.

## ANSWERS TO CORRESPONDENTS

### THE LAST DROP OF THE BULLET

EDITOR GUN DEPARTMENT:—I note in the October issue Mr. Crossman's reply to my comment upon some figures given by him in his article "Selecting that Rifle," and the explanation offered by him is so original I cannot forbear commenting upon it a little.

Following Mr. Crossman's method of consideration, summing up the article before discussing it (page 392, October issue), I will first sum up his article.

The article consists of: First, and acknowledgment that the figures given by him in the article

were in several instances wholly wrong and therefore misleading.

Second, A plea in extenuation that it is immaterial what figures are given when writing for the information of "the non-expert, for whom the article was written." He is later characterized as "the man who does not give a tinker's dash whether a bullet falls four feet or four rods in a quarter of a second as long as he gets a rifle that will do the work for which he wants it." Also that the figures were given incorrectly "to avoid taking up space demonstrating things that we know to be true and quoting figures that the man of average intelligence



is familiar with," and stating that "there be those who don't care about tiresome figures but who are interested in the general principle of the thing," and the criticism is characterized as "a craze for accuracy from a technical standpoint."

Mr. Crossman's language, quoted verbatim from page 163 of the August issue, is as follows:

"A bullet therefore traveling at the *uniform* speed of 2000 feet per second away from a rifle held perfectly horizontal four feet from the ground would strike the ground one-quarter (actually one-half) second later . . . or 500 feet (actually 1000 feet) away. If the rifle were fired at a deer 600 feet away and the bullet traveled this entire distance at this high speed it would strike the ground 100 feet short of the animal."

As stated above, Mr. Crossman was writing for the benefit of persons who were not sufficiently well posted in rifle shooting to understand that a bullet did not shoot flat. Since the result of such persons reading this article would be to lead them to aim about four feet over their game at 200 yards with a high power rifle it is difficult to see the exact value of the article in question to this particular class of readers, since they are the only ones who would be misled by it.

Not being satisfied with the abstract statement of the proposition he follows it with the concrete illustration of shooting at the deer, and if a person were not familiar with the facts, the natural inference would be in shooting at a deer at 200 yards one must hold four feet above his back while according to the facts if he were to hold at the top of the back the bullet instead of striking 100 feet short of the animal would in most instances score a kill as the depth of the body of a deer is usually more than one foot, and the result would be a low shot through the body. Therefore I think if Mr. Crossman was writing for the instruction of the class of people described, of whom the writer personally believes there to be very few among readers of *Outer's Book*, he should be far more careful to be approximately accurate in his statements than if he were writing for the benefit of those who could see the error in his article at a glance. Further there is fully as much need of accurate information on the part of the "non-expert" as on the part of experts like Mr. Crossman.

As to the "man who does not give a tinker's dash whether a bullet falls four feet or four rods in a quarter of a second so long as he gets the rifle that will do the work for which he wants it," I think in view of the fact which was emphasized by Mr. Crossman, that the rate of fall of the bullet is the same regardless of its forward velocity, when a man desires to purchase a rifle which will do the work for which he wants it, it is quite important whether the velocity be such as to permit the bullet to drop four feet in passing over the first 200 yards, and this is the very class of men who would be misled by Mr. Crossman's statements.

As to it taking up more space to state the figures correctly than to state them incorrectly, I fail to see where the extra space was required. If Mr. Crossman had not gone into figures this contention might have some merit, but he professed to give the figures and it was as easy, in view of his exact knowledge of the correct figures, to give them accurately as incorrectly, and they would impress

the same lesson upon the reader together with a correct comprehension of its effect.

As to splitting hairs, when it comes to advising people who, as he expressly assumes, are ignorant of the subjects upon which he writes, the statement that a bullet from a rifle of the type probably contemplated by them will drop four feet in passing over a given range, whereas it in fact drops but one foot from the line of sight, calls for something more than hair splitting, and the "craze for accuracy" is one of the most common attributes of the majority of "non-expert rifleman."

Mr. Crossman's acknowledgment of the misstatements in his article is so delightfully frank and the reasons given for making them so patent that the only apology to be offered for making even this comment is the fact that Mr. Crossman has during the past eighteen months been handing out through the different sporting magazines such vast quantities of information regarding rifles and shooting, much of which is radical in its nature, that the reading public would be very much interested to know whether it was to be read "from the standpoint of the non-expert for whom the article was written" and therefore subject to a discount of seventy-five per cent in its statements of fact, or whether it was intended to be taken seriously, and in justice to the public in his future articles he should be careful to demonstrate which of those are subject to discount and how much the discount should be.

Yours,

CHAS. NEWTON.

## THE BOLT ACTION

EDITOR THE OUTER'S BOOK:—Mr. Charles Newton, in an interesting article appearing in recent issues of your magazine, has attempted to show that the lever action rifle is the superior of the Mauser or Krag-Jorgenson type of bolt action in strength, rapidity of fire and general design. He also attempts to prove that the bolt action is not and will never be popular in America because American types of bolt actions have not proven popular.

It is probable that the average man will regard reports made by the Ordnance Department of the United States Army or by boards of officers convened to pass on arms or ammunition as being truthful, conclusive and unprejudiced. Acting on this belief I submit herewith some data on American bolt action rifles, as well as other types of American magazine rifles, as tested out by special boards of officers appointed for this express purpose.

If Mr. Newton's stand is correct, there should be no reason for adopting any other than an American type of rifle action for the use of our army. *It is a fallacy to hold that a soldier and a sportsman require arms that vary a great deal in their standards of reliability, strength, durability and ease of dismounting.* Lieut. Townsend Whelen has conclusively proven this to be wrong, in your magazine. An arm therefore that passes the tests for military use, will in all but the details of length of barrel and weight, prove entirely satisfactory for sportsmen. The converse is true that an arm, consistently rejected by boards of officers for military use, although it may prove to some extent satisfactory for sportsmen



will be inferior to an arm that fulfills the military requirements in every detail. Hence the following will prove of interest coming from such an authoritative source, as showing the difference between fancy and fact, between loose statements which cannot be proven and the actual tests.

Congress in 1893 passed an act making an appropriation for the purchase or manufacture of arms at the national armories, of \$400,000 and provided that no part of this sum should be spent for the purchase or manufacture of magazine rifles of foreign invention until all rifles of American invention coming within the broad specifications of the Ordnance Department should be thoroughly tested out by boards of officers selected by the Secretary of War. If no arm of American invention received the endorsement of such a board and all failed to pass the tests given, then the money was to be available for the manufacture of the arm recommended for trial by a board just previous to this bill—the Krag-Jorgenson.

In accordance with this, a board of six officers was selected and the members assembled at the Springfield armory to test such arms of American invention as should be submitted to them. The things desired—but not essential in the arm selected were as follows:

1. "It is essential that the arm be susceptible of use as a single loader with the magazine held in reserve, and also well adapted for such use where the magazine is empty.

2. The cut-off should be so prominent as to be readily observed by the file-leaders but not so placed as to be inadvertently operated by the soldier and must be capable of easy operation by the soldier.

3. It is desirable that the magazine may be charged whether the cut-off be arranged for single or magazine fire.

4. It is essential that the magazine may be readily loaded or replenished with single cartridges.

5. It is desirable that the magazine be susceptible of easy loading from auxiliary charges or packets (clip-loading) and essential that these packets form no part of the magazine mechanism.

6. It is essential that the floor of the receiver be of such form that cartridges can be laid upon it and without assistance of the hand, pushed by the bolt into the chamber and this whether the magazine be empty or charged and held in reserve.

7. It is desirable that the bolt be in one piece, a separate bolt-head being considered objectionable.

8. It is essential that the bolt be sustained under the force of discharge by a lug or lugs at its forward end and it is desirable that an auxiliary support be provided further to the rear either by a rib on the bolt or by the base of the handle or by both of these means.

9. It is essential that for ease of manipulation, the initial movement in unlocking the bolt and starting the empty shell be given by a motion of rotation, bringing into play the assistance offered by cams on the bolt, breech casing or receiver and that the final seating of the cartridge and locking of the bolt be accomplished in a similar manner.

10. It is desirable that the greater amount of compression of the main spring be accomplished by these two movements.

11. It is essential that the bolt should be locked before the firing pin can reach the primer.

12. It is desirable that the piece may be recocked without moving the bolt in case of misfire.

13. It is desirable that the extractor be strong and not partake of the bolt's rotation.

14. It is desirable that the ejector throw the empty shell clear of the gun and soldier but without excess of force.

15. It is essential that the mechanism be strong and simple, composed of as few parts as possible, readily dismantled without the use of special tools and assembled with a minimum number of screws or pins.

16. It is essential that the easy and smooth working of the mechanism whether the gun be clean or foul, be not sacrificed for extreme rapidity of action.

The last paragraph is referred to the gentlemen who believe that extreme—supposed—rapidity of fire is the one feature alone that recommends the lever action in preference to the bolt action rifle.

The tests consisted of tests for rapidity with accuracy, firing the rifle at a target 2x6 feet at 100 foot range, using rifle as single loader and magazine arm. There was also a test firing from the hip called rapidity at will. In the endurance test the rifles were fired 500 rounds without cleaning, using the magazine. The rifles were also fired 100 rounds as single loaders. The dust test consisted of submitting the rifle's actions close to a sand blast for two minutes—equivalent perhaps to an Arizona sand storm of an hour. The arm was then wiped clear of sand with the bare hand and by blowing upon it, as one would have to do under actual conditions. After this the rifles were fired 20 rounds. The magazines were loaded, the rifles fired the remaining number of rounds as single loaders, then the cartridges in the magazine fired to make up the 20 rounds. Another part of the test was to have the magazine loaded when exposed to the sand. The cartridges were then wiped, reloaded into the rifle and fired. To test the behavior of the rifles with bad cartridges some of them were taken and cross-filed on the head nearly through the metal. Others were cut along the rim. Others were cut the whole length of the cartridge. In this test paper was laid over the breach to see if gas escaped. Each piece was to be fired with charges heavy enough in the excessive pressure test to bring the pressure up to  $\frac{1}{2}$  greater than the normal. The rifles were then tried for ease of manipulation. Other trials were using the arm with two bad cartridges, dusting in the sand blast, then to be fired five times. The rust test consisted of exposing the action of the arm to Sal-ammoniac and then allowing it to stand two days, after which it was fired 20 rounds as single loader and from the magazine.

These tests are many of them things that might happen to a sporting arm in hard service and it is therefore of interest to see how these arms stacked up. The last trial was for ease of dismounting and assembling the mechanisms of the rifles.

Arms submitted were the Spencer-Lee, a hybrid, box magazine affair using the Lee magazine to some extent; the Lee 1893 Model; not described but from the references to it, the straight pull or very close to it; the Savage; the Dursts Nos. 1, 2, 3, 4; the Blake No. 1, both the latter being bolt action arms; the Russell Livermore, a Lee-Speed rifle with a new magazine, including 3 rifles of this design;



the White, a bolt action, box magazine; and the Hampden, another form of bolt action.

The results were as follows:

The Spencer Lee was summed up as being, "complicated, obsolete and entirely unsuited to the military service."

The Lee insisted upon opening itself when the inventor took his hand from the bolt handle, as well as other jams and trouble. Declared not simple and not suited for military service. The Savage showed very well, jamming to some extent, but it was declared that it required too much force to operate and was not adapted to the military service. The rifle showed to better advantage than did the others, however.

The Dursts required blows of a mallet to open them most of the time, which something the board decided the soldier would not always have in his possession and the rifle was not passed.

The Russell Livermore jammed, the bolt bound and the magazine was declared unsuitable for the military service.

The White was turned down for about six different reasons.

The Hampden magazine proved to be faulty.

The Blake was declared entirely unsuited to the military service.

It is to be particularly noted that the only Lee rifle entered—either of the Remington-Lee or Lee straight pull pattern, not being described—failed to qualify at all. In its endurance test we find remarked by the board:

"Four failures to feed properly from the magazine. Eleven jams as cartridges were pushed into the chamber. Considerable force required to close bolt. Bolt lifted, becoming nearly unlocked after firing unless handle was held down by the operator." In the single loading test, they state: "Bolt unlocked after each discharge whenever operator's hand was removed from the handle."

After being exposed to the sand blast, they said that "Considerable force was necessary to work the bolt. Blows from mallet needed in several instances."

As it is hardly fair to suppose that Lee would submit a poorer arm than the Remington-Lee made years before this we must take this as being at least equal to the Remington-Lee. It was weighed and found wanting by the board of the Ordnance Department and yet Mr. Newton says that our American bolt actions were the equal of the foreign types—which passed these tests—and that the reason they failed to become popular was through the inherent virtues of the lever action. *Mirabile dictu!*

Now one word as to that paragon of virtues, the Winchester which Mr. Newton holds up to us as the epitome of all the rifle merits of the present day, and I am done.

In 1899 the Ordnance Department tried out the Winchester Model of 1895—our box magazine, and the only rival of the Mauser or New Springfield type for handling the modern, powerful military type of cartridge. The report of the Ordnance Department follows:

"Its demerits for the military service are as follows:

*Lever action* of breach mechanism, necessity of *carefully inserting* the cartridges singly when charging the magazine.

Liability of top cartridge to escape from the

magazine guide tips after its insertion in the magazine and before bolt can be closed.

*Low rate of fire obtainable as a single loader and particularly as a magazine arm.*

Lack of a device for cutting off the magazine when charged.

Exceptionally weak attachment of the sear spring to the receiver.

Omission of any safety device other than the placing of the hammer at half cock when the piece is loaded.

Complicated mechanism which is composed of a large number of component parts, and *particularly the abnormal number of assembling pins and screws.*

Necessity of special tools for dismounting and assembling mechanism for repairs and cleaning.

Necessity for occasionally dismounting the breech mechanism to thoroughly and properly clean the arm.

(This is very peculiar in view of Mr. Newton's assertion that we do not need to take a rifle apart when in the field).

Special skill and instruction required for properly dismounting or assembling breech mechanism.

Liability of rear sight slide to slip during firing and thereby change the elevation.

Loss in velocity due to shortness of barrel.

Inferior accuracy as a target gun.

From a careful consideration of the results of the tests made and of the merits and demerits of the gun, the board finds that the Winchester rifle Model 1895, caliber .30, is not a suitable arm for the United States military service."

And the Mauser type of bolt action rifle, as exemplified by the New Springfield was found to fill the requirements of the board where the Winchester was found wanting.

Verily, verily, facts and tests by impartial, unprejudiced individuals or army boards can be snowed under by much advertising and brassband claims of superiority but they occasionally do bob up serenely.

EDWARD C. CROSSMAN.

## TO GET GOVERNMENT RIFLES

EDITOR GUN DEPARTMENT: In your August number of the Outer's Book on page 168, you have an article on "Encouraging Rifle Practice", in which it is stated: "It is now possible for any citizen to purchase the government rifle and ammunition." Please advise me where I can get the latest government rifle of the United States, the one that is now being furnished to the troops, the very latest one out, and its price. Thanking you for this information, I am. Yours truly, M. E. O'NEIL.

[The article to which you refer is from the office of the National Rifle Association, Washington, D. C. As I understand it, only members of the National Rifle Association, or members of its affiliated organizations, are privileged to purchase government arms and other ordnance stores, and then only through their local affiliated organization. The method of procedure for clubs desiring to purchase arms and ammunition is to forward to the Adjutant General of the state in which they are located a requisition for such arms and ammunition as is desired with the amount necessary to cover the cost of purchase, and accompanied



by a certificate from the secretary of the National Rifle Association of America, certifying to their ability. Rifles purchased become the property of the club. Requisitions for ordnance stores described in this price list should follow the classification and nomenclature herein described.

United States Rifle Model 1903 (New Springfield), \$15.60. Front sight cover, 2 cents. Oiler and thong case, 20 cents. Brush and thong, 15 cents. Sling, 90 cents.

United States Magazine Rifle made of 1898 (Krag), \$14.90. Front sight and muzzle cover, 4 cents. Sling, 45 cents.

The price of rifles does not include the cost of their packing boxes, which are as follows: For one rifle, \$1.04; for two rifles, \$1.47; for three rifles, \$1.74; for four rifles, \$2.39; for five rifles, \$2.61; for six rifles, \$3.15. Ammunition sharp pointed Model 1908, \$31.90 per 1,000 packed 1,200 to a case. Ammunition for 1894 rifle \$29.75 per 1,000, packed 1,200 to a case. Service cartridge shells for 1898 ammunition, \$13.00 per 1,000. Service bullets for Model 1898 ammunition \$9.20 per 1,000. Primers, 92 cents per 1,000. Colt's revolver, caliber .38, Models 1901-1903, \$11.60. Colt's revolver, caliber .45, five and one-half-inch barrel, \$13.20. Smith & Wesson, caliber .38, \$11.40. Gallery practice rifle, United States Army model 1903, .32 caliber, \$15.60. Cleaning rod .22 caliber, 24 cents. Cartridge holder, 35 cents. Cartridges, .22 caliber, \$2.05 per 1,000. The privilege of securing the goods and at the prices quoted above are only a few of the advantages of a membership in the National Rifle Association of America.—R. A. K.]

## WINCHESTER AND MAUSER

EDITOR GUN DEPARTMENT: I beg your advice on the following: Is the .351 automatic Winchester powerful enough for bear hunting? Is the 7 m.m. Mauser powerful enough for the same purpose? I am acquainted only with the .303 English army rifle which I carried while a cadet in South Africa. Yours cordially,

J. V. SPEARMAN, D. C.

[The Winchester .351 self-loader is certainly powerful enough for deer or bear, and although it has not the tremendous energy of the long range military cartridges, the difference is partly compensated for by its wonderful speed of fire, and convenient clip magazine reloading system. Many of the .351 self-loaders are in use in the hunting territory of Wisconsin, Michigan and Minnesota. I am in touch with a great many hunters in this vast country and I have yet to hear a single adverse report on the .351.

For grizzly bear, moose, carabou or other heavy or dangerous game, I would recommend a more powerful and longer range cartridge such as the .30-40-220, the .30 rimless, Model 1903, the 8 m.m. Mannlicher or Mauser, or the .303 British, in any good reliable hand-functioned arm.

The 7 m.m. is also a good cartridge for large game, but does not take rank with the .30-40 or the .30 rimless, with the 220 grain bullet. However, if you have one of the 7 m.m. Spanish-Mausers you need not fear to face any game on the American continent with it.—R. A. K.]

## SPANISH MAUSERS

EDITOR GUN DEPARTMENT: Kindly tell me where I can buy a 7 m.m. Spanish Mauser of the type captured by the United States Government in the Spanish War? Also cost of same? Where can I buy a Model 1898 Krag-Jorgenson, also cost of Krag? What is the best .22 caliber rifle made and what power of same caliber is best for all 'round target and small game use? I. e., .22 short, long, long rifle or .22 extra long? Can a near sighted person blame poor marksmanship to his glasses? Thanking you for a prompt answer, I remain, yours,  
H. E. COATES.

[You can purchase a 7 m.m. Spanish Mauser from Francis Bannerman, No. 501 Broadway, New York City. The price will depend on the condition of the arm. It will probably cost you from \$10.00 to \$12.00 if in first-class condition. There is a large list of .22 caliber rifles to choose from. The Winchester Model 1906, the Savage Model 1903, the Marlin No. 20 and the New Remington will all handle the .22 short, .22 long, and .22 long rifle, in the one gun, and are all first-class arms. The model 1890 Winchester is slightly heavier than the Model 1906, it has a 24-inch barrel and each rifle is chambered for one length of .22 only. You can purchase a Krag rifle or carbine Model 1898, or a New Springfield, if you are a member of the National Rifle Association of America, or of any of its affiliated organizations. The purchase must be made by your local organization through the Adjutant General of your state. A Krag-Jorgenson will cost you \$14.90, and a New Springfield \$15.60.

Any first class oculist can fit you with glasses that will make your vision normal, or at least be of great assistance to you. Many excellent marksmen wear glasses habitually.—R. A. K.]

## ARMY AMMUNITION

EDITOR GUN DEPARTMENT: What kind of powder is used in the .30 United States Army shell metal cased bullet as issued by the Government for range work? Does the powder deteriorate with age? Could good scores be expected with the above ammunition five and one-half years old, shooting at two and three hundred yards? I would like to buy a .32-40 single shot for 200-yard range work. Please advise me where I could get a good barrel, something better than the standard barrel. Yours,  
J. A. BOTTKOL.

[The brand of powder regularly used in the .30 United States Army, i. e., the Krag cartridge, is "W. A. .30 caliber," 36 grains is the standard charge. The powder is stable and will keep any reasonable length of time. I do not think you would be able to notice any falling off in accuracy, at two and three hundred yards in ammunition that had been stored five years.

The Winchester or Remington people will make you a .32-40 barrel that will group the shots in a three-inch circle at 200 yards. Many of the most skillful marksmen are using the Pope-Stevens barrels.—R. A. K.]



## FOR MOOSE AND BEAR

EDITOR GUN DEPARTMENT: I would like to have you or some other brother sportsman tell me through the medium of the Outer's Book, of which I am a reader, which of the following is the most powerful ammunition and gives the best penetration, and which will give the most satisfactory results on moose and bear. Marlin Model 1893, 32 special H. P. Savage Model 1899, 303 Winchester Model 1895, .30 U. S. A. Winchester Model 1895, .35 caliber or the Winchester Model 1886, .33 caliber. How is the Savage .25-35 for small game and what is its penetration and range. Yours truly,

NEWCOMER.

[Any of the rifles and cartridge named by you will give good results on moose and bear. Named in the order of their energy the cartridges rank as follows: The .35 caliber Winchester Center Fire, .30 caliber United States Army, .33 caliber Winchester Center Fire, .32 caliber Winchester Semi-Smokeless, and .303 Savage. You can also get the .30 rimless in the Model 1895 Winchester which is still more powerful than the .30 United States Army. I would recommend either the .30 Rimless, the .30 United States Army or the .33 as being heavy enough for your needs.

The .25-35 Savage is an excellent arm for any kind of small game up to and including deer; it has good range, and a penetration about equal to the .303 Savage, and .30-30 with the soft point bullet and but little less with the full mantle.—R. A. K.]

## THE MATTER OF LEAD

EDITOR GUN DEPARTMENT: I have just read Part II of Mr. Stillman's article on "The Praxis of the Shotgun," but I can hardly agree with him in regard to the amount of lead necessary in wing shooting. For instance, in shooting quail flying forty miles an hour, which is about fifty-nine feet a second, we will suppose that the quail is crossing the shooter at a distance of twenty-five yards, or seventy-five feet and that the charge of shot has a velocity of 825 feet per second. It would require one-eleventh of a second for the shot to travel the seventy-five feet, and in one-eleventh of a second the quail would travel five and four-elevenths feet, which, to be exact, would be the proper amount of "lead" necessary to hit the bird with the center of the charge of shot. Now if I am wrong I hope someone will do me the favor of correcting me and showing me my mistake.

I want to buy a .22 caliber rifle, and I would like to have about as good a gun as I can get. What is your opinion of the Hopkins & Allen Schuetzen? What would be your choice of a singleshot rifle taking S. L. & L. R. cartridges for target and small game shooting? With best wishes for the Outer's Book, I am, yours respectfully,

S. C. SHENK.

[Assuming that your calculations on lead are correct it would make considerable difference

whether your muzzle was kept swinging with the bird; or whether you shot at a point just five and four-elevenths feet ahead with stationary muzzle. Most marksmen, while shooting either in the field or at the trap, swing with target and do not stop when the shot is fired. With this method less lead is required and more accurate work can be done. It is easier to estimate a short distance than a long one. You have touched on a very interesting subject and I hope other lovers of the scatter gun will favor us with their opinion. You are safe in buying a .22 caliber repeater of any standard make. The Winchester Model 1906, the Savage Model 1903, the Remington 1908 and the Marlin No. 20, all handle .22 short, .22 long and .22 long rifle cartridges in the same arm. The Winchester Model 1890 has a 24-inch barrel, is slightly heavier than the Model 1906, and is chambered for but one length of cartridge. It is chambered for either .22 short, .22 long, or .22 Winchester rim fire.

My choice of a single shot rifle in .22 caliber would be the Winchester take-down chambered for the .22 long rifle cartridge. You can also use the .22 short and long in it. You can get this arm in Schuetzen style if desired. The Hopkins & Allen Schuetzen rifle, I am told, is an excellent arm, but I cannot speak from personal knowledge as I have never used it.—R. A. K.]

## PREFERS THE REVOLVER

EDITOR OUTER'S BOOK: I notice in an outing magazine a call for a .22 caliber automatic pistol, and elsewhere a statement that the Colt people are contemplating turning out a .22 caliber revolver. I hope that they will turn out a revolver instead of an automatic and for one reason only. The trigger pull of all automatics have more or less creep in them that can't safely be taken out. It doesn't cut much figure in a rifle when hunting, but it affects the accuracy in target work in the off-hand position. An automatic pistol is much worse on account of being supported by only one hand. When the manufacturer can eliminate the creep of the automatic, you will see me tumble on the automatic side of the fence.

I have been wanting a .22 revolver chambered for the .22 Winchester rim fire for some time. It would make one of the finest side arms on a hunting trip ever turned out.

I go somewhere every year, deer hunting and could always get plenty of mountain quail and tree squirrels if I only had a gun that wouldn't make too much racket. It would come in very nicely for snap shooting also, and you would still have some cash left in your pocket when evening came.

I certainly want a .22 revolver if they chamber it for the Winchester rim fire cartridge, the short and long rifle being hardly powerful enough to use in a revolver. Respectfully,

C. B. HUBBS.





THEY ALL LOOK ALIKE

—Duluth Herald



THE FOOL WITH THE GUN

—Buffalo Enquirer

## THE OPEN SEASON

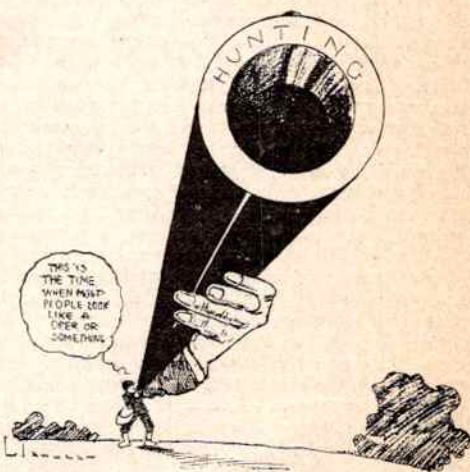
AS THE CARTOONISTS SEE IT



Each to the Other—Goodby, old Man, Take Care of Yourself—You Are Taking Your Life In Your Hands When You Indulge In Your Kind of Sport.

THE BEAM AND THE MOTE

—Stanwood, Ia., Herald



IT BEGINS TO LOOK PRETTY BIG

—Chicago Record-Herald

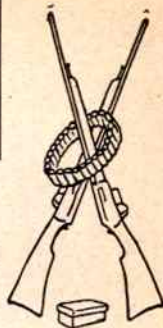




## GUNS AND AMMUNITION

EDITED BY ROBERT A. KANE

This department is intended to be a place for the exchange and discussion of views on any subject pertaining to arms and ammunition, from which no one with an idea to advance shall be barred. The only conditions are that the opinion must not be manifestly absurd, that it be expressed in courteous language and that no personalities be indulged in. Each opinion is printed for what it is worth and its publication does not commit the editor to the view expressed. The widest range will be permitted and our readers are invited to make free use of these pages, but it is important to remember that *under no circumstances will personalities ever be permitted.*



## THE CROSS-BOW, ANCIENT AND MODERN

By PAUL B. JENKINS

*"Et erant qui arcuballistas dirigebant sagittas"*

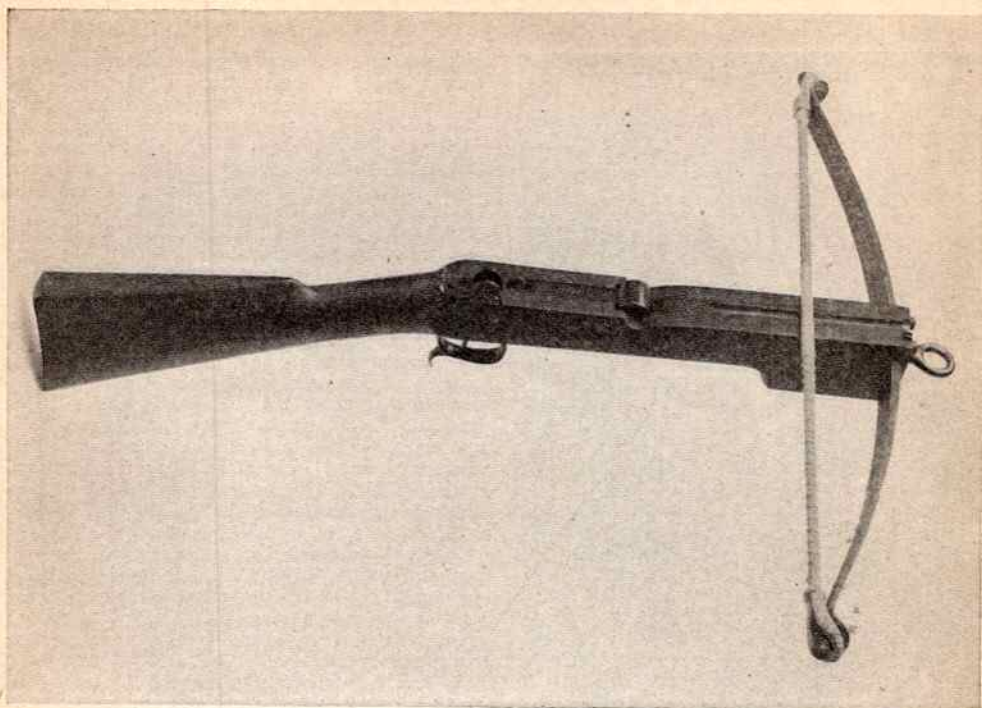
THERE were also those who from their cross-bows directed their arrows." So runs the translation of a sentence from a "Treatise on Military Art" which the ancient writer dedicated to the Roman Emperor Valentinian II., about 385 A. D., and which is accordingly exceedingly interesting, as it is the earliest known reference to the arm that is one of the three oldest known forms of projectile weapons.

The other two are of course the bow and sling. Ancient as both are, their origin utterly lost in the remotest antiquity, they were once common to the world over. The use of the bow is depicted on the carved bas-reliefs of the oldest Egyptian monuments and in the still older sculptures of the ruined royal cities of ancient Assyria, and at the very time when these monarchs were using the bow to shoot the lions of their royal game-preserves, the ancestors of our American Hurons, Sioux and Apaches were chipping away at the flints destined to point the shafts of their precisely similar weapons. The same is true of the sling, and in a score of ancient races the arm with which David killed Goliath was at once the commonest and the most effective of ballistic weapons. Nor is it extinct today, for the Bedouin boys of Arabia delight in exhibiting a most extraordinary skill for the "backsheesh" of the tourist to the Holy Land, and in Old Mexico the writer has himself seen a half-naked Indian "peon" goat-herd whip from somewhere in his scanty garb a sling of braided hair and with it shoot a round stone after a runaway goat with a deftness, force and accuracy that had to be seen to be believed.

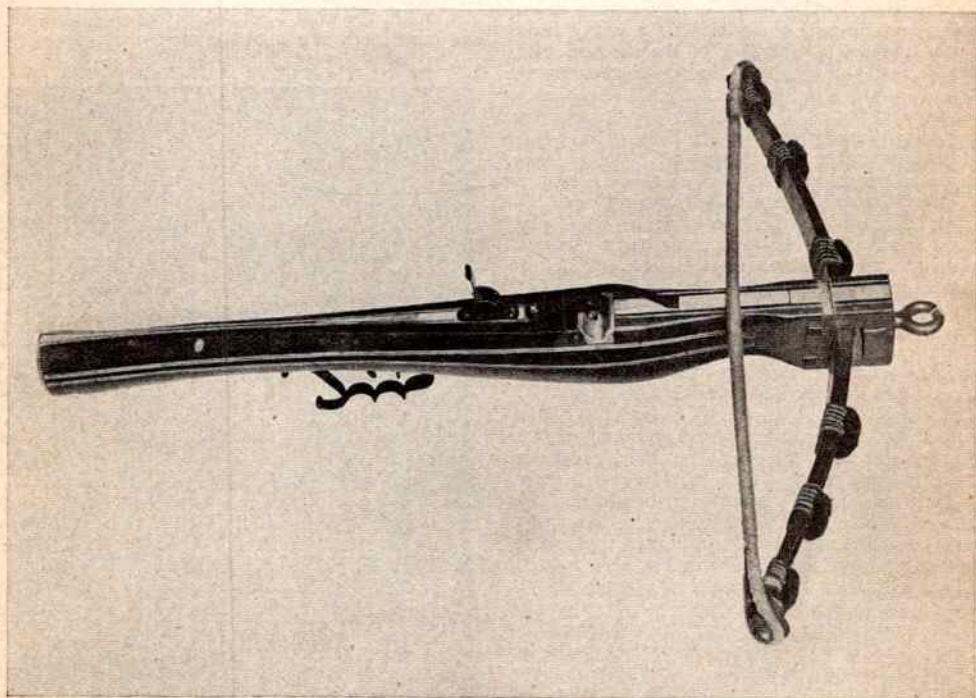
But the cross-bow was an arm of another sort than these easily improvised weapons. If the horn-bow of the Turk or the sinew bow-string of the Indian or the man-high yew-bow of the English archer were not known or not at hand, a decent stick and cord would yet suffice to make a bow, of a sort at least. For the sling, any raw-hide strip would do. But the cross-bow represented a new era in the development of projectile weapons. In its highest perfection it demanded the combined and utmost skill of the arts of the smelter, the smith, and the temperer of metals; the keenest tools and the most accurate eye of the wood-carver; and to these it frequently added the deftness of the worker in the precious metals, or in bone, ivory, and the like. And when to the work of these is added the simply enormous power of which some of these arms were capable, controlled and guided by such appliances as peep, elevating, and even wind-gauge sights, which are found on even very ancient specimens, it will be recognized that in this weapon we have an immense advance over earlier ideas of mechanics and ballistics, and a suggestion of power, range, and accuracy, that went far to pave the way for gunpowder, and then for "lock, stock, and barrel."

It is most curious to note the degree of perfection to which many of these weapons, that we commonly think of as so crude, were carried. Many of them had bows so powerful that the unaided human arm could not bend them in the slightest, and their cords were accordingly drawn back by little portable windlasses, attached for the purpose and then removed for the shot. Others were "set"





SWISS CROSS-BOW AS MADE AT PRESENT IN LARGE NUMBERS. OWNED BY THE AUTHOR



AN ANCIENT CROSS-BOW, UNDOUBTEDLY OF GERMAN MAKE, BEAUTIFULLY INLAID WITH IVORY AND PEARL  
In the Nunnemacher collection. Photographed by courtesy of the Milwaukee Public Museum





COCKING THE SWISS CROSS-BOW WITH THE LEVER

by means of a cord and pulley, others by a rack-and-pinion mechanism worked by a crank, others by a screw-and-rod, others still by a heavy hook of iron attached to the belt of the shooter, who, when he wanted to shoot, set the arm on the ground, bow-end down, stood on it, hooked the iron claw under the string and straightened up, thus using practically every muscle of his body to drag the heavy cord back to the trigger-catch. They were no mean hunters either, the men—and women too, like Queen Elizabeth of England and the Infanta Isabella of the Netherlands—who used these things. With the necessarily short range of an hundred feet or a little more, it took skill indeed to stalk one's game for the shot, and yet we find the old records, manuscripts and pictures full of accounts of their constant and successful use not only at birds and hares, but at deer, boars, bear, ibex, the chamois, and the like. The Chinese seem the only people who ever thought of making a "repeater" out of the cross-bow, but they did it successfully, and as late as at the taking of the Taku forts in 1860, the advancing British infantry were dismayed, as well they might be, to receive repeated showers of bamboo arrows from the Chinese fortifications, fired from cross-bows that shot a dozen times before reloading, and whose arrow-points were found to be poisoned!

Thus is the occasional rare and beautiful specimen of the ancient cross-bow, preserved under glass in some fortunate museum, be a thing utterly unknown to the mass of men today, at once the treasure of the antiquarian, the delight of the student of history, and an insoluble enigma to many an ignorant modern spectator, wondering gapingly "what those old things are"—such was by no means its fallen estate during not less than ten centuries of the world's history. The front rank

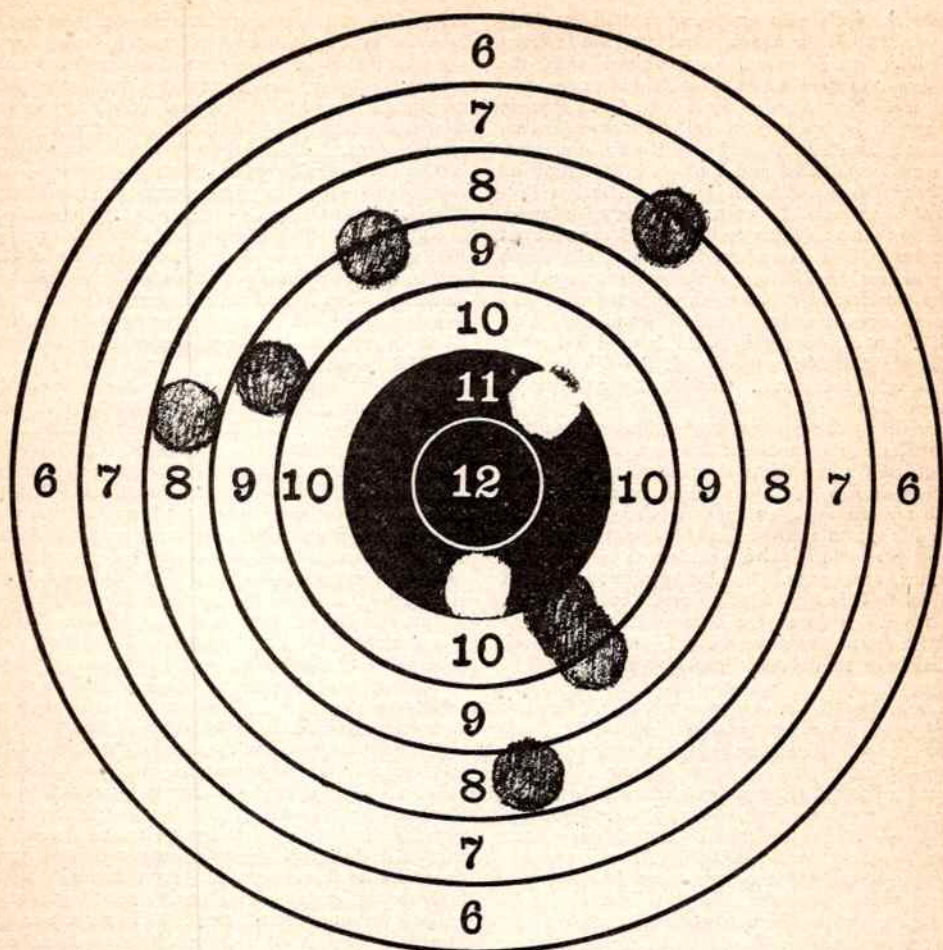
of the French army at Crecy (1346) was formed by not less than fifteen thousand Genoese cross-bowmen. At Hastings (1066) the Norman light-armed infantry charged into range of the Saxon wicker-work fortifications with their cross-bows "cocked"—"*arcubus tensis*," to quote the exact Latin words of the historian Thorne of Canterbury. No less than two kings of England, William II. (1100) and Richard I. (1199), died from being accidentally shot with cross-bow bolts while hunting, and even an Archbishop of Canterbury was tried for his life for having killed a game-keeper in a similar way. These things make us realize that until the hand-gun became the common military and sporting arm of the civilized world there was no projectile-weapon in existence that could compare, for accuracy and force at least, with the interesting combination of bow, stock, cord, bolt and trigger which we call the cross-bow. Also, perhaps, from the mentioned list of fatal "accidents," which are but a few from the many mentioned in the literature of the Middle Ages, we may realize that it is *not* the introduction of strictly "modern" weapons that is responsible for the annual fatalities of the hunting field, but that such casualties have never failed to occur when any tools whatever, capable of deadly effect, have found their way into the hands of ignorant, careless, or drunken men.

So much for the past history of the cross-bow. But who today—how many, for instance, among the readers of "The Outer's Book"—dream that the cross-bow is known, studied, and manufactured by the most modern of modern governments and used by experts in great contests of skill, *today*? Yet one of the most beautifully printed, illustrated, and most costly books among modern English pub-



THE AUTHOR SHOOTING THE SWISS CROSS-BOW





EXACT FAC-SIMILE OF 10 SHOTS AT 60 FEET. MADE WITH SWISS CROSS-BOW DESCRIBED IN THIS ARTICLE

fications is Sir Ralph Payne-Gallwey's elegant volume on "The Cross-Bow," whose appearance was followed by an invitation from King Edward asking its titled author to exhibit before him his great collection of ancient and modern specimens of this arm. The nature of some of the weapons displayed may be inferred from the fact that at least one gigantic old war-weapon required a straight pull of not less than 1,200 pounds, dead-weight, to draw its cord to the notch before shooting its a-mor-piercing bolt of steel!

Last summer, while spending some happy days in the old Swiss city of Luzern, I inquired where the best gun-store of the municipality might be found by an American who when in any foreign land likes to learn the "local color" in gun-things. The answers were unanimous, and it was accordingly to the quaint and fascinating shop of Heinrich Ryffel, No. 3 Winkelriedstrasse, that I bent my way. There was nothing to be seen that we do not equal or surpass in the best gun-store show-windows of the United States—unless it were the

new Swiss military rifle, the Robin, a *genuine* "straight-pull" by the way—but what was my amazement to see a show-case full of cross-bows! Brand-new they were, beyond dispute, with their shining polished wood and blued metal finish, and their heavy steel carriage-spring bows and adjustable sights were not to be passed by. My German of the Milwaukee-dialect variety sufficed to indicate that I simply *had* to handle them, and out from their case they promptly came. I commented that I would try one, grasped the bow-string, pulled—and with all my might I could hardly move the cord an inch nearer the catch! Smiling at my ignorance, the Swiss salesman produced a long wooden lever and showed me how to apply it so that its three-foot compound leverage could be used to force the heavy hempen cord back to the ingenious lock that at once held it fast and yet was released by a trigger capable of adjustment to precisely the "drag" and "pull-off" of the Swiss army rifle. In answer to other questions he told me that the weapons were made at the Government



arsenal as Neuhausen and were sold in considerable quantities to marksmen and patriotic societies by whom great annual competitions with the cross-bow are held and most valuable prizes contested for. Nor in Switzerland only, for in France, Belgium, Italy, Spain, Portugal, Germany, Austria, Denmark, Sweden, Norway and Russia, are cross-bows made and used and contests held. With all this information and with my beloved little collection of weapons old and new at home in mind, there was but one thing to do—and I counted out the price in those American Express checks which are apparently good over shop-counters anywhere in the world, and departed through the streets of Luzern, cross-bow on shoulder, wondering what kind of an experience I would have if I took a similar walk in Milwaukee. (N. B.—I have tried it since, and I found out! Goodness, how the people "rubbered!")

Indeed, as the accompanying illustrations will perhaps suffice to indicate, the weapon is no toy. If you doubt it, ask the park policeman who rubbed his chin dubiously as to whether or not to allow me to try the thing on the smooth golf-greens of Lake Park, and who was only induced to consent by receiving a little private exhibition of its power, accuracy, and range. Finally he admitted that I "acted like I understood the thing," but whispered that his colleague at the other end of the Park might not take the same view if one of my steel-headed bolts should whiz into his vicinity!

They "go some," those same bolts do, too. With the cross-bow I secured specimens of the two varieties of projectiles manufactured for it, both kinds six and one-half inches long, and both alike wooden-shafted, but one type having a slightly blunted point to its brass-ferruled steel head, the other with an exceedingly sharp point, and grooved or "threaded" like a gimlet or auger. The latter is considered by the Swiss the best for target-work, and I find that it indeed surpasses the former in both range and accuracy, though the blunter heads are chosen by the Swiss shots for hunting birds, small game, and the like. If the heads differ so do the shafts, for the game-arrows, if I may so designate them, have deep and twisting grooves or hollows lengthwise of their wooden rear-extremities, somewhat like the flat sides of a "Whitworth" bullet, obviously for the purpose of giving them a revolving motion about their longer axis, and consequently a steadier flight, exactly on the principle of the motion imparted to a bullet by the rifling. The desired revolving motion is successfully

achieved by this means and may be detected in the bolt as it flies. Curiously enough, the sharp-pointed type of projectile affords, without exception, both a straighter and a very slightly longer flight despite the facts that its grooves and accompanying flanges are not twisted but perfectly straight from point to butt.

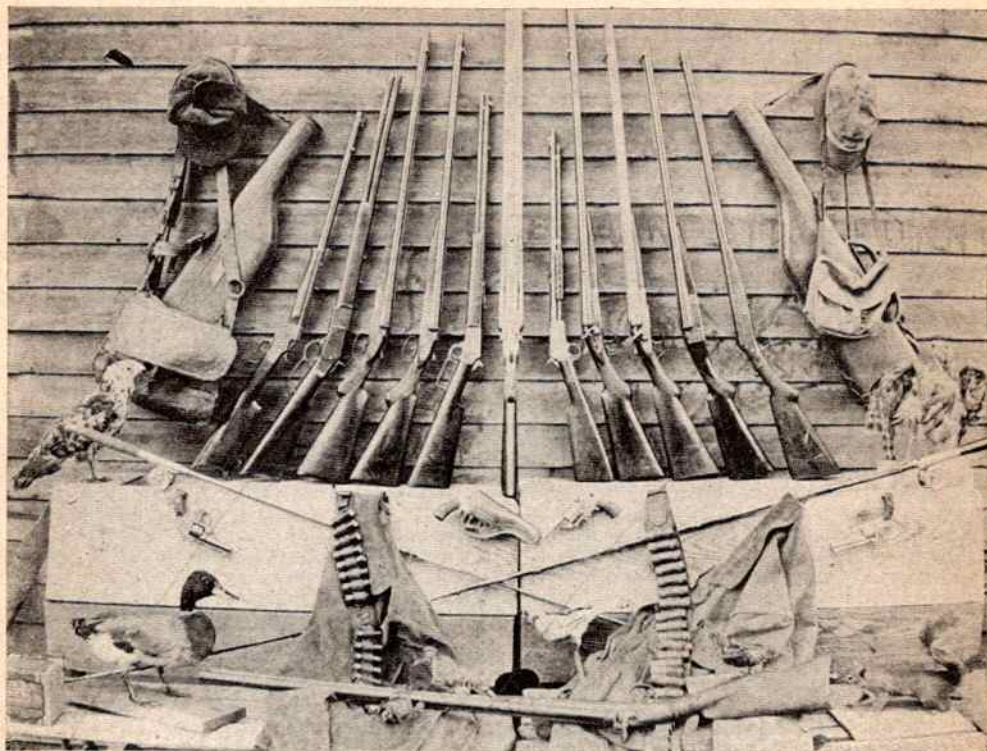
The "practically point-blank range"—to use that common but inaccurate term—of these bolts is about 75 feet. Their extreme range, when fired at an angle of 40 or 45 degrees, is almost exactly 105 yards. They are quite consistent in flight, and in all my experiments for range I have not had one vary 10 feet from this distance. The accompanying target shows my best ten shots at 60 feet. I am inclined to believe it a sample of the very best that the arm will do, as it was shot with great care and by waiting between shots for even the slightest puffs of wind to cease, for by the wind the projectiles, with their wooden shafts, are markedly deviated from a straight line. At this distance of 60 feet the steel bolt-heads invariably penetrate a full half-inch of pine board, striking a tremendously hard and vicious blow like that of a heavy hammer and exhibiting a power that I believe would drive them half-way through a man's body, for I have repeatedly had them split the inch-planks of a heavy pine board-fence. Their initial speed of flight, or what we would call "muzzle-velocity" in a gun, is about 150 feet a second, as I judge from my experiments. The sights on the arm are both interesting and excellent, as the rear is provided with set-screws for both elevation and windage, and when once set is really reliable, though so far to the rear (to be out of the way of the bow-string) as to be uncomfortable near the eye, for a rifleman at least. The trigger-pull is very gun-like, quite like that of a modern military rifle, and the mechanism that first holds and then releases the heavy cord of straight and wrapped but *not* twisted hemp fibre, is at once most simple, ingenious and exceedingly strong, as its needs to be to resist the powerful pull of the quarter-inch-thick steel carriage-spring bow. To sum it all up, the whole contrivance is a wonderfully well-made and interesting arm, and as it hangs among the guns on my study wall it suggests a thousand scenes of bygone days of battle and the chase, "when men did use yt accurst and impious arme, ye crosse-bowe, whose woundes were deemed so horrid by ye good Pope Innocente III., yt he forbade it to be used betwene Christians but did graciously permitt it against ye game and ye infidells!"

## TWO SPORTSMEN'S GUNS

THE photograph which we here reproduce represents the armament and sportsman's outfit of the Schubkegel Brothers, Arthur and Edwin, residents of Mascoutah, Illinois. It needs but a glance at their well chosen collection of weapons to show that they are not only practical sportsmen but that they are genuine gun lovers

as well. It requires no small amount of labor to properly care for so many guns and keep them in serviceable condition. The other fellow's guns are always a matter of curiosity to every gun lover and it is while studying and examining each others favorite shooting arms, or curios in that line, that the great fraternity of gun lovers





A COLLECTION OF WHICH ITS OWNERS MAY BE PROUD

spend their happiest hours. You will remember and relate with pardonable pride the time you cut three swiftly flying canvas-back ducks out of a flock, far over head, and still towering, after your companions of the duck pass had emptied their guns. And although you are willing to accept a little of the reflected glory, it was the Old Smith that really did it. You show your friends the latest high power rifle and together you discuss its marvelous ballistic properties, but it is the old muzzle loader that Dad carried when he was with Berdan and the same one with which you killed your first wild goose, that you linger over longest. Each different arm has its particular charm, they never become common-place or devoid of interest to one who has red blood in his veins or the love of adventure in his nature. Whether it be that we have more leisure to devote to our hobbies or the fact that we are better able to indulge in them. It is a fact that fire arms are being studied as they have never been before, while the quaint and curious in weapons is being eagerly sought after by many of our most serious minded thinking men. This should not be a source of wonderment as it has long been known that the story of its fire arms must ever be closely identified with the history of every nation. The Schubkegel brothers have shown a commendable generosity

and the true fraternal spirit in the arrangement and description of their arms for the benefit of others.

Starting from the left the guns shown are as follows: Stevens Ideal No. 44 rifle, .22 caliber; Winchester repeating rifle, .22 caliber, Model 1873, weight  $8\frac{1}{2}$  pounds, a rifle that has shot at least 50,000 cartridges and is in first class condition; Leferer hammerless, 30-inch barrel, "G" grade; L. C. Smith hammerless, 30-inch barrel, No. 2 grade, crown steel barrels, and a beauty; Marlin repeating rifle, Model '97; J. P. Clabrough & Bros., London, England, laminated steel, 34-inch barrels, weight  $11\frac{1}{2}$  pounds, an English imported gun, and a good one for shooting purposes and killing power; Winchester repeating rifle, .22 caliber, Model 1906; L. C. Smith hammer gun, 32-inch barrel, No. 00 grade; L. C. Smith hammer gun 30-inch barrel, No. 00 grade; Stevens No. 325 brush gun, 28-inch barrel, hammerless; Hopkins & Allen (fore hand) single barrel, 30-inch barrel; and last of all, the gun lying on the hunting coats is a trusty old musket. This old gun is merely kept as an ornament among the others, but it must have been one of the fancy ones in its day, for it is nicely engraved and has an extra wooden cheek pad on the stock.



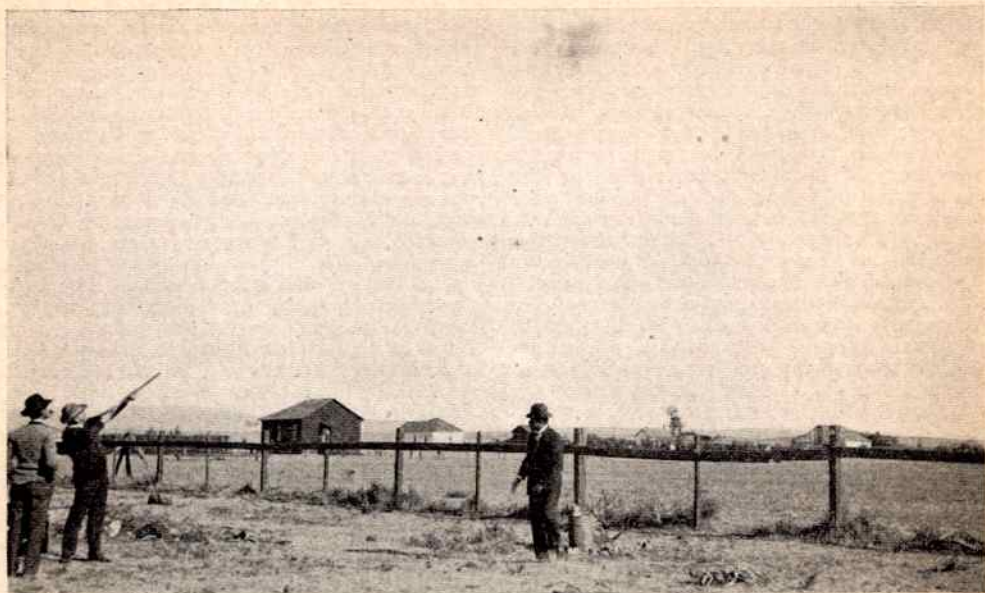
## CAPT. BARTLETT, GUNMAN

CAPT. GEO. BARTLETT, United States Marshal, scout, Indian trader, and known throughout the country as "Wounded Knee," is one of the few remaining genuine western heroes, whose presence among us and whose superb skill with firearms serve to remind the present generation that the buffalo was not a myth, that the painted Sioux was a horrible reality and the warring conditions which developed that type of intrepid frontiersmen, whom Capt. Bartlett represents so well have forever passed into history. Few men of the frontier in any age or in any country have participated in more dangerous encounters, have had more personal adventures, and narrow escapes, than this quiet and unassuming man whose marvelous skill with a man's weapon is the wonder of every one who is so fortunate as to witness his fascinating shooting exhibitions. It is no doubt due to his almost uncanny skill with rifle and six-shooter that he has escaped practically unscathed from the deadly perils which daily threatened him during his many years of adventurous life on the western frontier. Can it be that the brave and daring are protected by a divinity that makes them immune in the presence of common danger? Certain it is that those of our frontiersmen and adventurers who promptly accepted every hazard of battle usually escaped without injury. There is no gainsaying the fact that the rigid training necessary to become as expert in the use of fire arms as Wild Bill, Capt. Bartlett and other celebrated marksmen, makes a man more than ordinarily alert and quick to see and note every thing that takes place within their range of vision. With men of this type to see is to act; they never hesitate, which means that their immunity from casualty is due not to luck but to their own superior fitness to meet existing conditions. One of the most desperate of all the many encounters in which Capt. Bartlett has participated was a pitched battle with horse thieves in which he received the wound which gave him the name "Wounded Knee," by which he was known among the Indians and which afterward furnished a name for the last decisive battle between the Sioux Indians under Big Foot and a squadron of the Seventh Cavalry. The story of the fight with the horses thieves is best told in Capt. Bartlett's own words. It reads as follows:

"As the gang of outlaws approached the place in which we had taken position, we called on them to halt. Upon the command to halt being given, Exelby, the leader, quietly and seemingly without concern, informed us that we could go to a warmer place. His cool but defiant reply drew the fire from our weapons at once. From our shelter we had the better of position, though they were seven to our six. We did not stop to count, however, and never missed one of their

number until two or three well directed shots were fired at our party, straight from the upper end of the gully by one of their party who had stayed behind. That one was "Billy, The Kid." When the firing began he took up a position behind a post at the head of the gully. One of his shots killed Jack O'Hara, the ball striking him on the left side, coming out at the right. Another struck Fred Willard's coat, marking his shoulder blade, without wounding him. His last effective shot struck my right knee, shattering the joint and knee cap. But while all these things were being done to us, we did a thing or two to them. Exelby, the leader of the gang and one of the most notorious outlaws that infested the country, had been shot in the groin, and died of the wound in half an hour. Jack Campbell was shot through the head, the ball entering at the base of the nose; he died almost instantly. Harry Tuttle was shot in the elbow, shattering the bone to the shoulder. He managed to drag himself to Shuster's cabin and begged for mercy. Three of the outlaws were unknown to us, but were dropped by our bullets while running for shelter, to escape our fire. The Kid who did the only killing on our side, got away at the time but was hunted down and killed by Fred Willard one month later. When O'Hara was shot he dropped his gun and stood erect for a minute and pointing to the wound said, 'I'm killed.' When I was shot I dropped to the ground, but held fast to my Marlin repeater, a beautiful gun which the United States Marshal had presented to me. I crawled to the top of the hill and got there just in time to see Jack Campbell fire at one of our party. I raised my rifle and made that extra hole in his face right along side of his nose, which caused him to fall over backward. I still have Campbell's saddle, cartridge belt, knife and six-shooter. Dr. Babcock, one of my party, who was about 50 years of age at that time, was as cool and deliberate as can be imagined, and fought bravely, emptying his repeating rifle. He was found refilling his magazine with cartridges when told that the fight was over. He asked who was hurt besides Jack. When informed, he at once placed temporary bandages on my leg to ease the pain until we should reach Deadwood. My wound did not hurt much at first and I rode my horse as far as Spearfish. But I could no longer endure the saddle, and from Spearfish to Deadwood, fifteen miles, I was taken in a buggy, rather dejected because I had to give up. One apparently rough and tough character, though kind and generous, I shall never forget. When I lay helpless on account of my wound, Martha Canary, a woman of 40 years of age and known all over the western country as 'Calamity Jane,' was exceedingly kind to me and prevented the doctors from amputating my leg when blood-poisoning set in. She dressed in buckskin shirt





CAPT. BARTLETT BREAKING A BRICK IN THE AIR WITH AN AUTOMATIC RIFLE

and trowsers, high top boots and white felt hat, while her long black hair hung down her back below her waist. She could ride as far, and shoot as fast as any frontiersman. I had never been acquainted with her, but for some unaccountable reason she looked after my wants and provided me with everything she thought was good for my health. The doctors decided that my leg must be amputated in order to save my life. I objected. They then tried to drug me and perform the operation, but 'Calamity Jane' prevented them from carrying out that programme. My wound healed better than they expected and I got well, except for a deformed weak knee joint, but it beats a wooden leg after all."

Capt. Bartlett still walks with a slight limp, a constant reminder of his devotion to duty as an officer of the government, and a souvenir of the days when he was playing a leading role in the great drama: "The Winning of the West." Stern as were the brave young captain's official duties, they were sometimes softened by romance, and touched by the pathetic side of life. Three days after the Battle of Wounded Knee, on New Year's day, Capt. Bartlett and a party were sent to the scene of the battle to gather up the dead bodies for burial. It had been snowing some since the battle was fought and the bodies were frozen stiff. The captain says: "As I sat in the saddle gazing sadly over the field, wondering at the scene I had witnessed, I heard a noise which sounded like the feeble cry of an infant. I tried to locate the spot whence the sound seemed to come, but was unable to do so. My men thought that they too heard a sound similar to the one which reached my ear, but they were not certain. We maintained perfect silence and listened. In a few minutes we again heard a feeble cry as though from an infant, and the sound seemed to come

from a number of dead Indians, whose bodies were lying in a heap off at one side of the camp. I at once dismounted and went to the spot. I found the lifeless bodies of five Indian squaws wrapped in blankets. In turning the bodies over I fancied that I noticed some object moving underneath and again did I hear the pitiful moan of the baby. Cautiously, but quickly, I removed the blankets and found snugly wrapped in a mass of blankets, an Indian girl baby about a year old, and securely sheltered by the bodies of the five women, one of whom doubtless was the mother. As quickly as possible I extricated the little waif from its encumbrance of dead squaws and blankets and found the tiny thing unharmed. It was evident that in the general slaughter of the battle three days prior, the squaws had sheltered the infant with their bodies, from the bullets of the soldiers, saved its life and kept the spark of life flickering in the infant body for three days, while a Dakota snow storm was passing above the shelter formed by the dead bodies of the squaws. We baptized the little waif with the newly fallen snow and named her Zitka-lannuni (Lost Bird), which we considered a most appropriate name. I gave the child to a woman to raise and gave it the best of care. The story of Lost Bird reached Washington, and Gen. Colby's wife asked to have the child, which she wanted to adopt as her own and bring it up among the most favorable conditions. The waif of the Dakota Bad Lands is now a beautiful Indian maiden, well educated, cherished by her kind foster mother and a favorite among her associates."

It probably never occurred to Capt. Bartlett, while he was acquiring his wonderful skill with rifle and pistol in the discharge of his duties as an officer of the government, that he would sometime hold thousands of people in breathless



wonder at his faultless marksmanship, yet this is just what he is doing every day. He is the originator of the idea of proving by actual demonstration in public, with rifle, pistol and shot gun, the merits of fixed ammunition. At present Capt. Bartlett represents the Peters Cartridge Company, and with their ammunition in any make of gun, he does stunts of speed and fancy shooting that astonishes even those who consider themselves crack shots and who have had life long experience in the use of fire arms. Capt. Bartlett shoots like one who loves the sport for itself. It is his custom to give his audience an interesting and instructive talk on guns and ammunition and then prove his statements by ocular demonstration. It seems to make no difference to the captain whether the object is near at hand or at some remote distance, whether it be large or small, moving or stationary, floating or flying, his aim is accurate, his judgment of distance faultless, his eye unerring and his speed of execution so rapid that one can scarcely follow his movements. With a Remington auto-loading 30-30 rifle, he reduced to puffs of yellow dust, pieces of common brick as fast as an assistant could toss them high in the air; the pieces were then thrown in pairs with a like result. Oranges, apples and potatoes, wrapped in several layers of different-colored tissue paper, when struck with the high power bullet, seemed to evaporate and disappear as if it were a slight-of-hand performance, leaving only a shower of colored confetti floating like snow flakes in the still air. Pieces of  $\frac{1}{4}$ -inch boiler plate, about the size of a silver dollar, were tossed into space and drilled as easily and as perfectly as with a steam punch. The captain then varied his performance by giving a fine exhibition of deliberate shooting, using a 32-20 single shot Stevens Ideal rifle. Standing with his back to the objects shot at and aiming with a small mirror. The positions assumed and the methods of holding the rifle while giving this part of the exhibition combined to make it a most interesting feature of his entertainment. Discarding the single shot rifle for a .22 caliber repeater, he smashed small marbles, nuts, candy, and other tiny objects with a speed and regularity almost beyond belief. Pennies and small metal washers were sent spinning and singing through the air with each discharge of his little repeater. Fragments of common brick thrown 30 to 40 feet skyward were literally pecked to pieces in mid-air and often detached fragments

no larger than a hickory nut were caught and pulverized before they could reach the earth. Again taking his 30-30 Remington self-loader, Capt. Bartlett fired 20 shots at as many metal discs the size of a silver half-dollar, scoring 20 hits. The targets were recovered and each showed the perforation at or very near the center, only two were struck near the edge. A tin can filled with water and sealed was thrown into the air. Capt. Bartlett's first bullet struck the seam opening the can wide, allowing the water to escape in a glittering spray. The Captain then put four more bullets through the tumbling tin before it reached the ground. A piece of boiler plate fastened to a slanting block just clear of the ground was dislodged and kicked into the air with one bullet and hit twice with two more bullets, while in the air. He shot the spots out of common playing cards at a distance of 25 yards. These were in great demand as every one wanted a souvenir of the famous marksman. Capt. Bartlett is not less skillful with the scatter gun than with rifled arms, and finished his wonderful exhibition with a Remington auto-loading shotgun. He filled the magazine with a mixed lot of shells of semi-smokeless and different brands of nitro-powders and shot at objects thrown in the air in different directions and at varying distances. With faultless accuracy all were riddled, literally torn to pieces. In one instance a tin can was shot at. Every shot in the magazine, struck the can in its flight, each shot becoming more difficult as at each discharge the impact of the shot, of course, increased the range several yards. The difficult feats of marksmanship and manipulation here described are but a few of the stunts performed by this past-master in the use of firearms. Many demonstrators are satisfied to repeat the same work indefinitely. Not so with Capt. Bartlett. He is progressive and is ever-ready to spring some new feature for the entertainment of the public. He recently gave an exhibition before a moving picture machine. Those who were present say the captain's work was perfect. This is undoubtedly the first time shooting act has ever been reproduced in moving pictures. No doubt we shall soon hear of Capt. Bartlett, with his customary enterprise, giving an exhibition of fancy shooting from the hurricane deck of an airship, with a Peters Cartridge Company's banner flying at the peak.





# THE BOLT vs. THE LEVER ACTION

## THE OPPOSITION'S FINAL WORD

### PART II

By CHAS. NEWTON

MR. CROSSMAN charges that the writer, when quoting the dimensions of the steel parts opposed to the opening of the bolt, does not "consider the place where these locking bolts do their locking." He will now do so. These bolts do their locking at a point directly in the rear of the cartridge and about three inches from its head. The strain is taken upon both sides of the bolt equally, and thus symmetrically, and from a point about  $\frac{1}{2}$  inch below the lower side of the cartridge to a point about  $\frac{1}{2}$  inch above the upper side, which is likewise symmetrical and, in order that the bolt may come back while the action is locked, either *those locking bolts must be sheared through*, as stated in my former article, or *the receiver must be completely broken through its full depth, tearing the metal apart endwise*. The only other way in which the action could fail to hold sufficiently to protect the shooter would be in case the bolt itself be crushed to fragments by an endwise pressure, and a pressure which would do this would leave little of the locking lugs of a bolt action. This is where the locking is done, and it is at a point where it is as effective, *in view of the manner in which the bolt is supported by the receiver from that point to the cartridge head*, as at any other point and a consideration of this fact, and of what must be done in order to let back the bolt of an 1886 Model Winchester causes one to think again of Mr. Crossman's statement, added to Mr. Stevenson's incident of the Esquimaux injured by a lever action rifle bolt letting go, that *the rifle was the 1886 Model Winchester*.

Mr. Crossman complains that the writer "harks continually back to the 1886 Model Winchester." He does, and for the reason that he considers it the best of the type. Mr. Crossman does not base his argument for the bolt action rifle upon the Remington-Keene, Hotchkiss, Lee Straight Pull, 11 m.m. Mauser, Lee-Speed, or any of those arms, concerning which his opinion is anything but complimentary, but "harks continually back" to the Mauser and Mannlicher. If Mr. Crossman may choose the type of bolt action which he is to advocate, discarding those which do not measure up to his standards, why may the writer not choose the type of lever action which he wishes to defend? Mr. Crossman does not undertake the advocacy of the cause of *all* bolt actions, so why should the writer be called upon to justify the construction of *all* lever actions?

And now it might be well to stop and consider just what is the subject of this discussion. It

started out as a discussion of the relative merits of THE BOLT ACTION AND THE LEVER ACTION, as a SPORTING RIFLE. Mr. Crossman seems to be constantly swinging to a discussion of foreign-made rifles as against those of American manufacture, whether or not a rifle should be finished as carefully as a watch, the American protective tariff on firearms; the best type of military rifles, etc., and winds up in a challenge to all the world for a shooting match. What these different propositions have to do with the real question of whether the people find a rifle actuated by the bolt more awkward than one actuated by the lever, the writer cannot see. Mr. Crossman delivers himself of a long letter quoting the United States Army requirements for a repeating rifle for army use, and a statement of how the different rifles submitted met those requirements, but the only attempt to connect these quotations from the ordnance office reports with the subject of sporting rifles is in the statement that:—"It is a fallacy to hold that a soldier and a sportsman require arms that vary a great deal in their standards of reliability, strength, durability and ease of dismounting."

This proposition I dispute. I think it a conservative estimate that not one percent of the sporting rifles made are either made or purchased with the idea of taking them into the wilderness, strictly speaking, that is, taking them where they cannot be repaired if they are broken, without too great sacrifice of time. The requirements are vastly different in the arm used for the average sporting trip, and that used for military purposes. From the standpoint of reliability, if this means freedom from jams and malfunctions, Mr. Crossman has failed to show any great preponderance of evidence in favor of the bolt action, from his report from the Commandant of the United States School of Musketry at Monterey, above noted, showing that in the hands of expert professional soldiers it jams once for each 1,000 cartridges fired, to his statement (Oct. Outer's, page 415) that "If the cartridge is allowed to go into the magazine with the bullet pressed hard against the front of the magazine well, *often the spring will not have sufficient strength to force it up*. Reason, careless loading on the part of someone." It might happen also, that the end of the bullet might be forced against the front of the magazine well by the recoil of the arm.

As to strength, this may relate to strength of the action under strain of explosion, and strength of the arm when handled.



As to the strength of action under strain of explosion, I think it has been shown that the best type of lever action is stronger than the best type of bolt action. As to strength of the arm under handling, the military arm requires great strength to withstand the rough handling in transportation and in execution the manual, to the greater part of which the average sporting rifle is never subjected. Therefore the average sportsman prefers as stated before, to dispense with the thick, heavy military stock and certain of the other features highly important for a military rifle, for the purpose of obtaining other features in which his more careful handling of a rifle will permit him to indulge; he will dispense with extreme and unnecessary strength in the stock in exchange for less weight and greater trimness of outline, with facility of reloading and of use in the prone position for greater speed of fire to the capacity of the magazine and greater convenience in manipulation in the standing position.

As to durability, the modern 1886 lever action repeater will outlast the owner, as far as mechanism is concerned, and I have yet to learn that a bolt action will prevent erosion, clean a rifle or improve the fit of a bullet. As to ease of dismounting, the soldier must be furnished the greatest facility for cleaning to prevent his neglecting this operation, while I doubt if the average sporting rifle, even when taken to the wilderness after big game, is dismounted once in five years. Of course, for a trip involving great hardship and exposure, it is important that the rifle be easily dismounted, and if going on such a trip the writer would certainly take his New Springfield because of its possessing the very qualities which Mr. Crossman enumerates, but there is no necessity of making every rifle on the lines required for such work when not one in a thousand is ever used thus, and the manufacturers should not be blamed because they put out the goods which the people will buy. They made the bolt actions, and just as good as the contemporaneous lever actions, as I have demonstrated, and *the people would not buy*. Then why blame the manufacturers, the protective tariff, or anything except the people themselves who bought what they preferred because they wanted it. If a man wanted a bolt action he could have bought it at any time up to within the last three years, and there are some on sale even now. He did not want it.

Mr. Crossman has discovered some bolt action rifles which will take down, but adds that none are imported and that his pet rifle does not. This feature of the lever actions was not cited as a point of great superiority but merely to show that one could obtain access to clean the lever action from the breech, but we are tempted to ask why, if the takedowns are made abroad, they are not imported? It is little consolation to know, when one wishes to put his rifle into a Victoria case, that Lord Hard-upp has one which will take down. The reference to the 1895 Model Winchester, which does not take down, simply calls for a restatement of the fact that it has not been commended by the writer any more than have some types of the bolt action by Mr. Crossman.

If one cannot get rifles to take the cartridge which he fancies in the Model 1886 action, this is not the fault of the action itself or of the principles involved, but of the factory which produces it, and

the remedy is to ask for the Model 1886 action for that cartridge, not to condemn the lever action as a means of actuating the rifle.

While the lever action rifle was contemporaneous with the prairie schooner, this fact alone does not establish its *superiority now*; neither does it establish its *inferiority*. Its exclusive use at that time, however, to the exclusion of the bolt action, does show what the hardest race of men who ever lived thought of the merits of the two types when used under circumstances of greatest need and greatest hardship, and it was their verdict which was cited, since the whole question is, in the last analysis, one of opinion.

I stated that the extractor of the 1886 Winchester could be made stronger, *if needed*; I did not state that it *was* needed and have never learned of such need. The stock can be made as strong as that of a military rifle *if needed*, but it is not needed in a sporting rifle. If it is desired to adapt the 1886 Winchester to cartridges of the greatest power, any part, which is not strong enough at present can be made heavier and more solid, and that would not make it any the less a lever action rifle.

And now as to the proposed shooting match.

Mr. Crossman has had a vast experience with military rifles. He tells us (*Outer's* for Oct. 1909, page 415) speaking in the third person:—"What Mr. Crossman has not learned about the tricks of the New Springfield, by *watching* his own and those *used* by other men, and by *correspondence* with other users, will in all probability not be ascertained by Mr. Kaufman." He does not claim to get his experience by *using* rifles, according to the above, but may possibly have used them somewhat, therefore I accord him the credit of being able to do the above shooting.

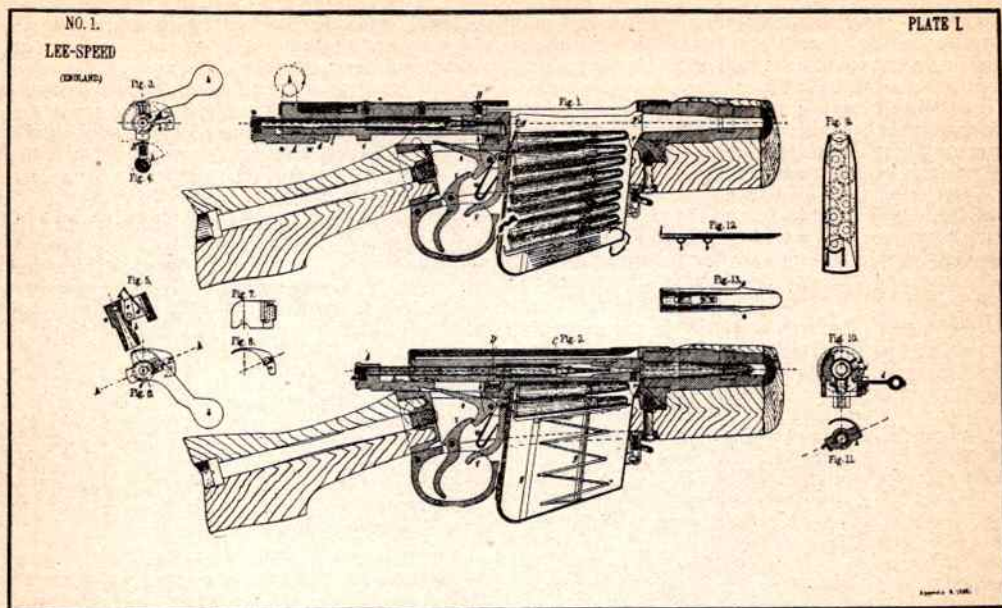
He or any soldier or professional shot who handles the bolt action rifle almost daily, training for rapid fire matches, acquires a skill and speed in its use which no one not undergoing a similar training can hope to equal.

The speed and accuracy of the fire which can be delivered by some of these professional marksmen will surpass that of the average man armed with a lever action rifle, but it is *because of their special and daily training and practice in the manipulation of their rifles*. The average sportsman does not care to spend hours every day working the action of his rifle, but when he goes hunting wants to take his rifle, go and shoot and when he comes back it is set away until he wants to use it again. This is the class for whom sporting rifles are made and by whom they are used and paid for, and a man of this class can fire more than twice the number of aimed shots, to the extent of the magazine, with a lever action rifle that he can with the bolt action in the same length of time. The writer has seen men who can walk upon their hands with their feet in the air just as steadily as other men walk on their feet, but the average man still stays right side up when he travels. It is all a question of practice.

Therefore, it is not a question of what some expert can do, but what *the average man*, who uses the rifle, can do.

In Mr. Crossman's supplemental letter in which he quotes from the reports of the board of ordnance he says:—"As it is hardly fair to suppose that Lee would submit a poorer arm than the Remington-





SECTIONAL VIEW OF THE LEE-SPEED RIFLE

Lee made years before this, we must take this as being at least equal to the Remington-Lee."

He also refers to this rifle, which was the Lee 1893 model, as "not described but from the reference to it the Straight Pull or very close to it," therefore he knew it was the Lee Straight Pull rifle which was under consideration and I merely desire to call attention, without characterization, to this insinuation in view of the fact that the Remington-Lee was practically a duplicate, except for the details as to construction of magazine, of the modern Mauser while the Lee Straight Pull was a radical departure from all pre-existing types and was deficient in strength owing to the lack of the forward locking lugs and lack of lateral support of the bolt in addition to being very complicated.

Mr. Crossman also in this letter gives the report of the ordnance officers on the model of 1895 Winchester and it is worthy to note that it is nowhere suggested in that report that the arm is lacking in strength or that the action shook loose.

Mr. Crossman has already repeatedly admitted that the Model 1886 is far stronger than the Model 1895, yet he has endorsed Lieut. Whelen's statements that the tests of different ordnance boards showed that the lever action was insufficient in strength, but we have been cited to no ordnance board which has ever tested the Model 1886 and I know of no other test having been made of the Model 1895, therefore would like either Mr. Crossman or Lieut. Whelen to refer us to the tests to which they refer.

Mr. Crossman quotes from the board of ordnance reports the fact that the Blake rifle was pronounced unsuitable for the military service, which was, as before pointed out, largely a question of its clip and magazine being combined in one, and this point is no objection in a sporting arm, but if one desires to learn of the performance of the Mauser

and Mannlicher while under similar government tests he can do so by consulting reports of the Chief of Ordnance of the United States Army for 1892, where he will find the description of the Mauser tests on pages 242-3, 253, 264, 267 and 286, while the Mannlicher records appear on pages 241 and 250. And in considering these it must be borne in mind that both Mauser and Mannlicher rifles were made in large factories and had been made for some time on machinery and the perfected and finished product turned out for tests, while the Blake rifle was practically an inventor's model, subject to all the disadvantages under which an arm of this kind must labor both as to minor features in design and flaws in workmanship without being able to correct them by long experience.

The foregoing observations were written in reply to that portion of Mr. Crossman's article appearing in the October issue. Since that time the manuscript of the balance of his article printed in this issue has been sent me and it may be briefly summed up as follows:

It is expressly stated that the only point to be touched upon is the difference in the bolts of the Lee type of rifle as used by England and that used by the Remington factory.

In answer to my questions propounded in the October issue it states that the British service rifle *does not* lock at the front end, the Remington-Lee high power rifle *does* lock at the front end and that this location of locking lugs is an important feature of the rifle.

The reply to the fourth question contains about ninety per cent of the article and is put in the form of another question.

On reading it through carefully we find a long discussion raised as to what type of Lee-Remington the writer referred to in his article, Mr. Crossman



professing great uncertainty on this point and endeavoring to show that it was the old black powder Remington Lee with which he compared the British service rifle, stating that they were practically the same action, and an intimation that he understood that my article referred to this rifle and not the modern high power rifle. In the first place the article distinctly referred to both the black powder type and the high power type, the black powder type having been compared with the contemporaneous lever action black powder rifle, and the high power type having been compared with the contemporaneous high power lever action rifles.

The article also seems to condemn unstintedly the black powder model of the Remington-Lee, and it certainly would not be a suitable arm for high power cartridges, but it was not used for high power cartridges. As to its efficiency as a black powder rifle it was the official arm of the United States Navy for many years and was only displaced by the adoption of the small bore Lee Straight Pull. Therefore, for the purposes for which it was intended and used, it must have been a pretty fair rifle. As to my references to the high power model of the Remington-Lee I particularly stated that its weight was from 6½ pounds up, and that it was adapted to all the sporting and military high power cartridges in use in this country at the time it was manufactured, this statement appearing in my first article. That Mr. Crossman understood that I was referring to the high power model as well as the black powder is very clear from his statement in the October Outer's where, in showing his experience with the rifles under discussion, states on page 394: "I have used the Lee-Remington, both in the .45 caliber and in the modern small bore high pressure type, for years." Therefore, when the above was written he understood the writer to be referring to the high power Remington-Lee as well as the black powder arm.

The final article then endeavors to establish that the British rifle is better than the Remington-Lee with forward locking lugs, saying: "If the Lee bolt was available either with these lugs on the forward end or without and the British ordnance department experts decided against the type with the forward locking lugs, then the Lee bolt as used by England is stronger than the pattern used by the Lee-Remington." This is the first time I have ever seen it soberly asserted that the action of an ordnance department affected the strength of a rifle action, and I am still of the opinion that the Remington, Mauser, Mannlicher, Blake or any similar bolts are actually just as strong as though they had been adopted by our British friends. Why the British government rejected this type of bolt I neither know or care, as it has nothing to do with this discussion.

We find considerable discussion of the "Lee bolt." This term itself is a misnomer; it is no nearer correct to speak of the "Lee bolt," except as applied to the Straight Pull rifle, than to speak of the Lee stock, the Lee barrel or the Lee bayonet. The only element entering into either Remington or British rifle which was in any wise attributable to Lee was in the magazine, the magazines of both being designed under Lee's patent, and even the old Remington-Lee and the British bolts are about as dissimilar as it is possible to make them.

The bolt of the British rifle is in two pieces, the body and the head, and the bolt head *does not rotate* (see report Chief of Ordnance, 1902, page 183), it being practically the old Mauser 11 millimeter single action bolt, while I am informed that the bolt of the Remington-Lee black powder rifle was a solid bolt *rotating its entire length*. (See House Document, No. 510, first session, 57th Congress, Vol. 2, page 1231).

Mr. Crossman states that the British rifle was adopted in 1893. If true they had the choice of at least three different bolts locking with a single lug at the front end, and seven bolts locking with double lugs at the front end, all those arms having been submitted to the United States Ordnance Department in 1892.

My statement that the American public has rejected the Remington-Lee since 1879 is said to be "misleading." It is not. In the black powder period they rejected the black powder model, in the high power era they rejected the high power model shown on page 507 of the November issue. If the high power Remington-Lee was not rejected what did happen to it? It is gone.

The writer is charged with "quibbling" as to which type of Remington-Lee bolt he refers to, the old or the new (and the answer is "both,") and immediately following this is the statement "the improved form of which is proving so unsatisfactory in English shooting circles at present," which is merely a reiteration of the statement that the improved form of the Remington-Lee bolt, shown on page 507 of the November issue, is the bolt in use in the British rifle, and this after his acknowledgment in answer to my questions that the bolts are radically different.

Mr. Crossman says he "did not mention the Lee-Remington as turned out recently for high power cartridges . . . but merely took up his assertion that this rifle has been consistently rejected by the American public for the past thirty years."

Mr. Crossman *did* mention the high power Remington-Lee specifically on page 394 of the October issue, as hereinabove quoted. Comment is unnecessary.

Continuing we find the statement regarding the Remington-Lee that "its weakness is merely in comparison with arms made to use the ultra high power cartridges." The weakness must be in some such place as the sectional cut shows it just as strong in its locking parts as any bolt action made. The "weakness" is all in Mr. Crossman's comparisons.

Mr. Newton is asked to, and will now explain, why the Mauser type of rifle was chosen for the United States army instead of the Remington-Lee. This point he has already explained several times so we will now put it in such form that it cannot be overlooked. IT WAS BECAUSE THE MAUSER USED CLIPS FOR RECHARGING INSTEAD OF EXTRA MAGAZINES. This was no disadvantage in a sporting rifle but an absolute disqualification for military purposes. Our ordnance board adopted *only* the magazine of the Mauser. The bolt was different, the cut-off different and practically every feature except the magazine resembled other rifles more closely than the Mauser.



We next find the statement that "we have Mr. Newton's word that the Lee-Remington in all the military requirements is the equal of the Mauser." And yet the writer has repeatedly and consistently stated that as a military arm the Remington-Lee was not the equal of the Mauser, and has repeatedly given the reason why, viz.: it does not load from clips. Some more comment is unnecessary.

As to the writer stating that the camming back of the firing pin on the Mauser was of recent date, to the best of the writer's recollection, although he may be mistaken, the Spanish War Mausers cocked on the closing movement and the change in design was made since that time, although the principle of camming back the bolt to full cock is far from new. The writer has a .45 caliber magazine military rifle stated by Bannerman to be a Russian arm, which is stamped on the barrel 1873, and this rifle is cammed back to full cock by raising the bolt handle the same as the present Mauser, Krag or New Springfield, but it is not a Mauser rifle.

The charge has been frequently made by Mr. Crossman in the course of his articles that the manufacturers of the lever action rifles were trying to suppress the bolt action rifle, to prevent their use, and were actuated by unworthy motives in so doing, accomplishing their ends by "flamboyant" advertising, whatever that may mean, and all this under the iniquitous guardianship of a protective tariff, yet in his article he states that in advocating the use of the bolt action he is "flying in the face of public opinion." This latter statement is true, and it is very pleasant at times to indulge in this exercise through the columns of a magazine, but when it is done in the manufacture of goods for sale to the public, bankruptcy awaits the aviator unless he stops short of that point. The Winchester Company flew in the face of public opinion with the Hotchkiss rifle, the Remingtons with their Remington-Lee and Blake with his bolt action. The latter had no other lines of goods to act as a parachute, and struck hard, the former firms were saved by their other business.

The whole question of bolt action against lever action rifles, however, resolves itself into a matter

of opinion. For the man who prefers the bolt action the bolt action is best; for the man who prefers the lever action that action is best, and the great majority of Americans have preferred and still prefer the lever action owing to the fact that it is functioned by a lever instead of by a bolt.

In conclusion, the writer wishes to express his appreciation of the fact that controversies between contributors to this department are wearisome, and in general uninteresting to any except the participants, and the only apology which the writer can offer for the amount of space he has consumed in this magazine is a desire to call attention to certain statements of fact in the articles written by Mr. Crossman.

He has endeavored, in so doing, to refrain absolutely from in any way passing judgment upon Mr. Crossman's experience, knowledge, skill or veracity, believing such judgment should be rendered only by the readers of the articles, and has endeavored to confine himself to statements of actual facts and the comparison of those facts with the statements of Mr. Crossman, and if he has in any way inadvertently expressed his private opinion of the latter, wishes here and now to apologize, not only to him but to the readers of this magazine for such discourtesy; and he wishes to publicly thank Mr. Crossman for not, in a single instance, disputing any statement of fact, as distinguished from matters of opinion, made by the writer throughout the entire controversy.

He considers his object to have been attained when Mr. Crossman published his explanation of his recent statement regarding the drop of the bullet, the statement being found in August Outer's Book and the explanation on page 413 of the October issue, and his statements concerning the identity of action of the British service rifle and the Remington-Lee, hereinbefore quoted, based upon his alleged actual and long continued use of those arms. Therefore as far as this discussion is concerned the writer calls it closed. We hereby cheerfully accord to Mr. Crossman the privilege of the last word—

"And bid a long 'good night to Marmion'."

## A WORD IN CONCLUSION

By E. C. CROSSMAN

THROUGH his desire to avoid dragging out the discussion as to the bolt and the lever action type of rifle to a tiresome degree, Mr. Charles Newton has courteously forwarded to me a carbon copy of his article on the subject, which is to appear partly in the November and partly in the December issue of your magazine.

I am under obligations to Mr. Newton for so doing as the discussion has dragged long enough. As I am under obligations to the editor of the

Gun and Ammunition department for much space as it is, I shall endeavor to make my closing article as short as possible. In this endeavor, the task of replying to all of the arguments put forth by Mr. Newton has been given over as it is in a measure, thrashing out old straw. The question after all resolves itself into one of personal taste—and I must admit that to date the American public has chosen the lever action rifle in preference to any other. I believe that a change is at hand



in rifle actions in view of the long-hard trips necessary to obtain game and of the steadily increasing pressures which the modern cartridges give as they are brought out. Whether I am right or wrong, time will show. Mr. Newton prefers the lever action and has ably shown his reasons for doing so. I on the other hand prefer the bolt type and have used up much valuable space in *Outer's Book* trying to explain my reasons for flying in the face of public opinion. The public aforesaid must be the judge as to which set of reasons appears the strongest.

The only point in Mr. Newton's article on which I wish to touch is the question as to the difference in the bolt of the Lee type of rifle as used by England and that as used by the Remington factory.

It will be recollected by those who have followed the progress of the bolt action rifle and its adoption in different forms by the different civilized nations that the Lee bolt and cartridge handling mechanism was adopted by England in 1893, the rifle to be used with a cartridge giving 2200 foot-seconds velocity as turned out at that time and developing 41,000 pounds pressure at the breech. This date is 14 years after the date of 1879—at which time Mr. Newton's rejection process of the Lee-Remington by the American public began—Page 720 of the *Outer's Book* for July. It is therefore reasonable to suppose that the British war office had its choice of the most up to date form of the Lee bolt at that time, or could purchase the right to make it from the Remington factory—at that time in the business of making military rifles. We must therefore take this Lee of the date of 1893—14 years after its introduction to the American public according to Mr. Newton—as the best form of Lee bolt to be obtained and we must also come to the conclusion that by taking this bolt as my example I am more than fair to Mr. Newton's argument as to the Lee bolt action being an excellent one. Mr. Newton simply stated that the Lee-Remington had been consistently rejected by the American public for thirty years without going into details as to any improvements or stating that he meant the most up to date form of it. Therefore, as I did not enter into details or state which form of the Lee-Remington I meant, I am entirely justified in stating that the Lee-Remington—consistently rejected by the American public—was the same as the newer and more up-to-date form selected “at a very recent date,” by the British war office. And if its selection was not “at a very recent date,” then I am not entitled to same use of the term as Mr. Newton.

Mr. Newton took the Remington-Lee as an example of the bolt action which the American public has consistently refused to accept. I attacked this as not being a perfect type of bolt action and pointed out the failure of the Lee of England, using practically the same action but made by the English arsenals, when it came to the question of adapting the rifle to the modern cartridge of the class of the 1906 Model of the United States. I spoke of the actions as being “practically the same,” as they are. Mr. Newton points out that the Lee as made by the Remington factory has the front locking lugs and that the Lee of England lacks this locking device, depending on lugs at the rear to lock the bolt against the

explosion. He asks specifically whether or not he is right in this respect.

Replying to his questions as he asks them, I would say,—

First, the British service rifle has not the locking lugs at the front end of the bolt.

Second, the Remington-Lee *high power* rifle has these locking lugs.

Third, I certainly consider these lugs to be an important feature of the bolt action rifle.

As to the fourth question, I will use the Yankee's privilege and reply with another. If the Lee of the date at which the manufacture of the British service rifle of the present type was commenced, had these lugs at the forward end, why did the British war office not adopt this type of bolt? Was it superior as designed by Lee to the type with only the locking device at the rear and if so, why was it not adopted by the British? *If the Lee bolt was available either with these lugs on the forward end or without*, and the British ordnance department experts decided against the type with the forward locking lugs, *then the Lee bolt as used by England is stronger than the pattern used by the Lee-Remington*, through the verdict of these experts and I am more than fair to Mr. Newton's argument by selecting the *strongest* Lee type on which to base my criticisms. If the Lee bolt with forward locking lugs was available to the English experts at the time of the selection of the Lee as the military rifle of England and yet this type was not selected, there was something radically wrong with Lee's application of this form of locking device.

If on the other hand, if the Lee bolt with locking lugs on the forward end is a *newer* form than the one selected by the English, then the old Lee was an archaic form and the reason for its non-adoption by the American public is not hard to see. The use of locking lugs on the forward end of the bolt is not at all new—the Mannlicher, Model of 1888, for instance. If Lee failed to adopt this form of lock to his bolt—with the other borrowings from continental inventors, he failed to bring his rifle up to date. The American public was justified in this case for refusing to take a rifle admittedly inferior to foreign types.

Therefore, to draw the only possible conclusions, either the English experts regarded the front locking lugs as applied by Lee, to be inferior to the plan of locking the bolt at the rear end and my statement that the two types were practically the same should be *modified* by saying that the English found their type of bolt *superior* to that of the Remington factory. Or on the other hand, if the Lee bolt was *not* obtainable with front locking lugs at the time of the adoption of the Lee by England, it was plainly inferior to the Mauser and Mannlicher types which did lock by lugs at the front end and could be regarded with suspicion as not being up to date and only adopted by England as a means of getting around the necessity for adopting the invention of a German. It is my impression that Lee was born in Canada.

Perhaps Mr. Newton can explain what he means by the statement in *Outer's Book* for July—page 720—that the American public has consistently rejected the Lee-Remington for the past thirty years—since 1879 to be specific—and yet has to face the alternative of showing that either the Lee bolt was not locked properly by front locking lugs



at time of the adoption of the idea by England, fourteen years later or else the front locking lug as applied by Lee was so faulty that the English experts preferred to use the bolt without this feature. Evidently something wrong with the much-vaunted Lee in one respect or the other. Certainly England would not adopt a bolt inferior to that used by the Remingtons, when that factory was in the business of making military rifles at that time and quite willing to sell the right to make the rifle for a consideration.

In either case the bolt proved unsatisfactory and faulty—Mr. Newton can tell us whether the Lee-Remington high power bolt is a patched up replica of the bolt used by the arsenals of England or whether the front locking lugs are of so modern an improvement that the English could not get them when they adopted the Lee rifle.

If this latter hypothesis be true, then why make the misleading statement that the American public has consistently rejected this rifle for thirty years—since 1879—giving the impression that the modern Lee-Remington high power—made for a few years and its manufacture entirely discontinued—is the same as the rifle rejected by the American public thirty years ago? If it is the same why did the English not adopt it. Is it not a fact that the Lee bolt was brought up to date too late and the makers finding this to be true, discontinued its manufacture when they found it impossible to overcome the reputation of the old Lee-Remington?

Therefore I was entirely justified in my statement—made advisedly—that the Lee-Remington—which Mr. Newton says has been consistently rejected by the American public for the past thirty years, is the same as the Lee of England—adopted by that country about twelve years under Mr. Newton's prescribed thirty and presumably of the highest type. Mr. Newton is either quibbling as to which type of bolt he means—new or old, of the Lee patent—or else he is under the impression that the Lee-Remington bolt is the same as that of thirty years ago—the improved form of which is proving so unsatisfactory in English shooting circles at present.

What improvements have been made in the Lee bolt for new cartridges are beside the question—these improvements came too late to establish a new reputation for the rifle, while the box magazine protruding below the stock was admittedly more in the way than the magazine of either the Mauser or the Krag.

To sum up, the Lee-Remington arrived in its old form at a time when the lever action was quite sufficient for the black powder cartridges used and the American public was not impressed by any special advantage offered by the new rifle over the old types in the way of strength and ease of taking down for the reason that the pressures were low and no alarm was felt as to a possible blow-back. The old 1886 Model, the finest of the Winchester line, was available not long after the introduction of the Lee and for black powder, even the writer would prefer the Winchester referred to. Having failed to make its self popular at that time, it merely dragged along without any decided improvement until its final demise not long ago. It has been inferior to the Mauser since 1893 both as to bolt and plan of handling the cartridges.

My dragging the Lee into the controversy is for the reason that Mr. Newton informs us in the July issue of Outers' Book that because this rifle had been consistently rejected for thirty years by the American public, the up to date Mauser or Mannlicher type is not superior to the lever action of the vintage of 1886. Thereupon Mr. Newton hurriedly drops the rifle consistently rejected by the American people and which he attempted to prove to be an example of the fact that a perfect bolt action existed thirty years ago, and takes to the Lee-Remington bolt made for cartridges of the modern smokeless high pressure type. We are considering the bolt actions and the lever actions of today only—not those whose manufacture has been abandoned through inherent defects. The Mauser is the standard action in every country on the globe from the standpoint of strength and simplicity, the Lee-Remington is no longer made. What is wrong?

I will call Mr. Newton's attention to the fact that I did not mention the Lee-Remington as turned out recently for high power cartridges and which is no longer made, but merely took up his assertion that this rifle has been consistently rejected by the American public for the past thirty years. I was more than fair to his argument by selecting the Lee mechanism adopted by the British for modern cartridges—presumably the most perfect to be obtained some twelve years after this rejection process mentioned by Mr. Newton and which has lasted these thirty years.

Mr. Newton quotes from Dr. Hudson's fine book on "Modern Rifle Shooting," as a proof that the Remington Lee is a fine arm. This has not been disputed, its weakness is merely in comparison with arms made to use the ultra high power cartridges. This is not the point I wish to make however. Mr. Newton finds it necessary to quote from a book written by the most competent rifleman in the world as a proof of the excellence of the Lee—merely because the author says the action is an excellent one—in its up to date form—for a long range rifle and that the rifle will pass the tests outlined by the author as to finish and correct size of bore, etc. What this has to do with the action is hard to see, nor is the Doctor referring to the rifle from the standpoint of military requirements or of the man who uses a rifle in the field, but merely from a target shooting standpoint. This might be written about the Model 1895 Winchester—which even Mr. Newton does not like—and his opinion is worthy of respect when it comes to rifle actions. Mr. Newton well knows the difference in the simplicity of the Mauser and Lee bolts and magazines.

Mr. Newton states that in weight, balance, strength, simplicity, durability and ease of dismounting and assembling the Remington-Lee was the equal of the Mauser and Mannlicher as turned out one year ago. *These all being military considerations in selecting a service arm*, let Mr. Newton explain the adoption of the 1903 Model magazine rifle of the United States—a Mauser in every detail save the change in position of the safety lug and the cutting in two of the firing pin—changes that only an expert could detect in examining the two rifles—Mauser and United States 1903. *Are our ordnance boards so unpatriotic that they deliberately take a foreign type of bolt in preference to this*



*gem of a Lee-Remington?* We have Mr. Newton's word that the Lee-Remington in all the military requirements is the equal of the Mauser. The United States army Ordnance Department decided to the contrary. Which may we decide to possess the greater knowledge?

Mr. Newton rightly points out that in the Remington-Lee I did not discover any great inducement to selecting the bolt action as a perfect arm for hunting and other purposes. This is of great assistance to me in my argument.

"Mr. Crossman is an enthusiastic advocate of the foreign bolt action," writes Mr. Newton. I might call Mr. Newton's attention to the fact that he strays from the straight and narrow path of truthfulness in this remark. I am an admirer of the Mauser type of bolt action but believe that its American adaption is the finest of all. I prefer American arms at all times—when they are the equal of those made elsewhere in the points that go to make up a perfect firearm. Perhaps Mr. Newton can show that I have ever compared such weapons as the Colt and Smith & Wesson revolvers with the clumsy weapons turned out abroad or that I have ever compared American arms with foreign—to the detriment of the former except in the line of the rifles made for ultra high power cartridges and which presumably would be used in very rough country. In this I have a shining example in the United States ordnance department in its selection of first the Krag-Jorgenson and later the Mauser-New Springfield for the use of the troops of this country. Can Mr. Newton object to the citizens of a country casting sheep's eyes at rifles not made at home, when its military experts in two separate instances, went abroad for rifles for the use of the troops of that country? If so, why?

Mr. Newton says that the fact of a bolt being cocked by the cam motion or by the straight push home of the bolt is a "trivial detail." I can only refer Mr. Newton to the published remarks of Lieut. Whelen for light on this point. The worthy lieutenant has shot some, too, when you come to investigate.

Mr. Newton states—to prove his long experience with the arms which we discuss—that the camming back of the firing pin on the Mauser is of very recent date. This feature is about twelve years old as far as the writer can ascertain, as applied to the Mauser and it was used on the Krag, first issued in 1893—4—or about sixteen years ago. Thus we have an accurate gauge of time with which we can measure Mr. Newton's other remarks as to periods specified as "short time ago, etc." The cam motion of cocking the arm, in fact, dates nearly back to the Indian fighting days and yet was never applied to that gem, the Remington-Lee. Is it possible that other details of the arm were also that far behind the times?

Both Mr. Newton and myself have attempted to demonstrate the merits of the arms which we prefer. Mr. Newton can see the good points of the bolt action to some extent—as I can those of the lever type. To Mr. Newton the good points of one rifle loom up larger than do those of the other. I with perhaps a perverted vision, cannot see the matter in the same light. This is what makes arguments and often brings out the facts of the case. That Mr. Newton has brought out many, I frankly admit. It is to be regretted that Mr. Newton's carbon copies of his Mss. do not agree with the originals—through some fault in the carbon paper used, presumably. Through this strange variance I was led to say regarding the copy sent me that I was unable to find anything in it that seemed to be in harmony with the facts. Strangely enough the article that finally appeared in Outer's Book differed from my copy and did contain many statements that were in *direct harmony* with the facts in the case.

We must blame this to the mysterious difference between the Ms. sent me and the one sent to the editor of Outer's Book.

I have greatly enjoyed Mr. Newton's articles and confess that I have learned much from them—although, stubbornly enough, I cannot find conviction in his excellent papers.

[THE END]

## INTER-CLUB GALLERY MATCHES

THE National Rifle Association has been requested to inaugurate a series of inter-club gallery matches between the rifle clubs affiliated with one association during the coming winter under the following conditions:

Number of men on team, 5; number of shots per man, 10; distance, 75 feet; target, international (similar to Standard American); position, any authorized American position; arm, any .22 caliber rifle without telescope; entrance fee, \$5.00 per club for the entire series; prize, a trophy, emblematic of the indoor team championship of United States to become the property of the club, and medals to each member of the winning team.

It is proposed to use the entrance fee for the purchase of the trophy and medals. With the

probable entry list of twenty-five or more clubs the prize will be worth striving for.

The targets to be used in the matches will be signed and issued by the N. R. A. and returned to the office of the Association after being shot on for the judges to determine the scores and announce the winner. Scores will be shot in strings of five on separate targets and those telegraphed the night of the shoot will be unofficial. As soon as all entries are in the N. R. A. will make up a schedule, arranging it so that all of the teams will compete with each other, the number of matches to be shot depending upon the number of entries. All matches to be shot on Saturday nights on dates to be later announced. All matches must be finished before March 1st.



# A LITTLE GUN TALK

By Mrs. B. R. BUFFHAM

[Editor's Note.—Mrs. Buffham is a deputy game warden of New Mexico, with headquarters at Roswell. She is meeting with great success in her efforts to protect game, fish and upland fowl. Under her personal direction, many of the rivers are being restocked, and ranchmen are everywhere lending their assistance to obtain such splendid game birds as California quail, bob white, and Hungarian partridges, to stock the large cattle and sheep ranches. The ranch owners are generous with their men and money and the press is endeavoring to encourage the work and supplement the efforts of the state authorities.]

ONE day last week I visited a second-hand store to look at a small stove. While there my attention was called to a large pile of .22 caliber rifles of various makes—there must have been at least fifty in all. I asked the gentleman in charge what price the rifles were being sold at. He smiled and said the boys had caught him for once; they had cost him an average of a dollar a piece. Many of them were comparatively new guns, and some of them were repeaters. Nearly every one that I examined had a cartridge or an empty shell stuck tightly in the chamber, and the barrels were foul and badly rusted. I offered the salesman a dollar for an auto-loader on condition that he would punch the shell out of the chamber. In attempting to do so with a cleaning rod, the head came off leaving the cylinder of the shell stuck fast in the chamber. These rifles had been bought by health seekers, taken out and shot probably about fifty times, then set aside without cleaning. Subsequently some of them may have been used by inexperienced boys as marks of their efforts to extract the stuck shells with a jack knife were plainly visible on some of them. I did not invest, as most of those examined by me were utterly ruined. How do you keep your rifle clean? is a question often asked me. *I do not let it get dirty*, is my answer. I once ruined a fine new barrel by letting it get very foul and setting it aside in that condition. Once a rifle barrel becomes rusted, a new barrel is the only remedy. I usually clean with a brass brush rod dipped in ammonia. Sometimes I use Rex lye in the proportions of a teaspoonful to a glass of water. I first rub out all the burned powder residue thoroughly, then dry carefully and oil with a good grade of oil. In loading the magazine I cover the last cartridge to be fired with Winchester gun grease. This acts as a lubricant and affords a partial and temporary protection to the barrel and breech until it can be cared for properly. When much shooting is done and the rifle is exposed to changes of temperature, unless it is cleaned promptly it will soon be ruined. I read with great interest of the improvements suggested for rifles by men who make fire arms a study. I think it would be well to improve what we already have and try and get the best possible results from each. Rifles supposedly of the same caliber, often vary several thousands of an inch in diameter of the bore and they are not properly finished sometimes. They are sold at a price so low as to preclude the possibility of good workmanship or even good material. I



think, however, that the principal trouble with American arms is the haste in turning them out and the lack of established standards to work to. I once visited a large factory and was deeply impressed with the unseemly speed with which rifles in vast numbers were turned out. It looked as if they were trying to fill a war contract with a time limit instead of making perfect and well finished arms for American sportsmen. I am familiar with gun making on both sides of the water. Gun making, as we knew it on Bond Street, London, is an art that has not yet reached America. There one can get what he wants—if one has the price. In America I can get a German to checker my stock neatly, he says he could even case-harden the working parts, but he acknowledges his inability to convert a weapon that handles like an army musket into a lady's fowling piece. On the whole, I am satisfied with my American machine made arms. Their performance is satisfactory if they are properly cared for, but I think it would pay the American manufacturer to concede something to the wishes of those from whom they draw their support.



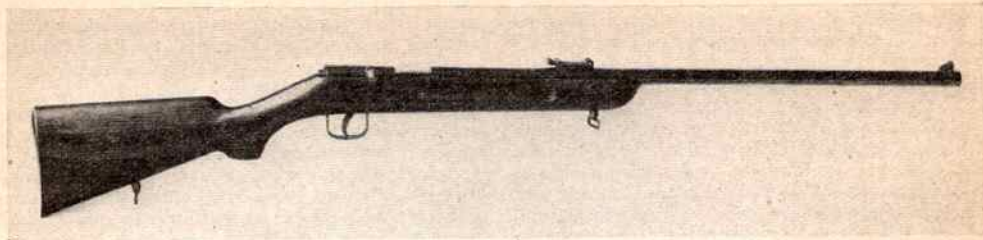
# IMPROVEMENTS IN AMERICAN ARMS

By "ALMO"

**A** RUNAWAY; two rifles thrown from a hunter's wagon with the result that the barrels of both were badly bent. The old man had paid but little attention to rifled arms for several years. As the owners of the two rifles were friends of mine, I determined to play a neighborly trick on them by straightening out the barrels unknown to them. The damaged rifles had been left in a local hardware store. Having secured them I took them back to the designing room so as to enable me to work undisturbed. The first rifle was of American make, a model 1895, chambered for the .30 government ammunition. It took me less than five minutes to straighten the barrel of this arm and make it as good as ever. The other rifle was a Haenel-Mannlicher, an imported arm. With this rifle my work as a gun smith was cut out for me. The barrel of the Mannlicher seemed to be as resilient as a buggy spring but after considerable effort, I finally succeeded in getting it straightened so that it would stay. I examined the two rifles with great care, compared them and finally gave my opinion as follows: The American made arm is of soft steel and can be worked by automatic machinery run at a comparatively high rate of speed. Arms made in this manner may be sold at a very low price but will not be as durable as arms made of harder metal. The imported rifle is made of tempered steel and has superior lasting qualities. I tested the bolts and receivers thoroughly to learn the degree of their temper and hardness and found the same relative difference throughout. The domestic made arm was constructed of soft mild steel; while the foreign arm was composed of steel hardened by the best known process. No sane person expects to get a gun of first class hardened steel as cheaply as one of the softer material. The process of case hardening as applied to American sporting rifles is nearly a lost art. And for good reasons, no one except those who want fancy guns, seems to be willing to pay extra for it and the manufacturer is unwilling to work for reputation only, as some of the English gunmakers do. About ten years ago I ordered a model 1886 Winchester rifle, to be case hardened. When the arm arrived the receiver was well case hardened but the bolt and working parts were all soft. I at once made an iron box, filled it with bone charcoal, and made all wearing parts very hard. Let us see if the results warranted the trouble. On that action I wore out one .45-70 barrel, one .40-82 barrel, and one .33 caliber barrel somewhat damaged by rust. It now has screwed into it a hardened imported barrel made by Haenel, taking an 11 m. m. cartridge. It will be a test of time as to which will outlast the other, the American case hardened receiver or the imported barrel. The stock is of imported walnut and was beautifully checked, but constant use has worn the checking nearly smooth, yet it is still a beautiful arm. It surely pays to buy the very best in fire arms, but if we

must have the very best we must pay for them. Fancy walnut stocks, fine checking, and real case hardening are expensive extras on an arm, and add considerably to the modest price of the standard American rifle. Many riflemen throughout the country are asking for improvements in mechanisms but until we are ready to pay more for our arms we must be satisfied with what we have. The same conditions prevail in the shot gun department of fire arms. The softness of the material used in their construction enables the manufacturer to fill his factory with automatic cutting and milling machinery which run at a high rate of speed enables him to turn out great quantities of guns with wonderful dispatch. Not many years ago I bought a very popular make of gun, a 16-gauge. I decided that the gun which was a fine shooting arm, was too heavy, and had too much metal in the frame. In reducing the gun to what I considered a proper weight and better balance, I had no trouble cutting away surplus metal from around the inside hammers, also trimming down the heavy tang and working out unnecessary material around the main springs, thus reducing the total weight of the arm one-fourth. I sometimes find so called Krupp barrels very soft, compared with those that come to this country on imported guns. American manufacturers are certainly turning out arms that are satisfactory to the great mass of their customers, and if gun cranks want anything different they can get it by ordering special hand-made guns. The first model even of machine made guns must be made by hand. It is possible that a type of rifle could be produced that would suit both the hunter and army officer. If so, Uncle Sam could then send back all his imported models, for the United States Government will never approve of anything inferior in the line of national fire arms. As for myself. If I ever again hunt big game with a rifle "that's dangerous," I must know for a certainty that it is more powerful than even a well-made shotgun with plenty of powder and a steel-pointed projectile. From my earliest youth I have known the danger of an encounter with wounded wild beasts in Africa. I have been surrounded by wild pigs in South America. I have had several foot races with wounded moose in Canada. I have been tossed into a mesquit thicket by a wounded deer in Texas, all because I persisted in using a small bore which, while powerful enough to penetrate a Dreadnaught if it only were anchored long enough to be struck in a vital spot. If game would only remain standing long enough to plant the small bore, high power bullet in exactly the right spot, all would be well but since it does not, the old man will carry a weapon that will deliver a knock down, stay down blow in as vital a place as the time and my nerve will permit me to reach. Make sure of your aim for the first shot; then press the trigger.





## EVERY INCH A RIFLE

THE neat half tone cut above places before our readers the substantial yet graceful outlines of a well made and extremely serviceable .22 caliber rifle. Unlike many other small bore rifles, it was made for a definite, one might say a patriotic purpose and not merely to sell. This business-like looking little arm was built in England where it is manufactured in great numbers for the purpose of teaching the youth of that country the rudiments of military marksmanship. The little weapon is well adapted to the purpose for which it was designed. It has a bolt action, a simple and durable mechanism which cocks with the closing movement. The barrel is twenty-five inches long, the receiver and action adds five inches more. The arm is a take-down and can be packed in a 30-inch case. The stock is of good close grained black walnut, with a neat pistol grip so placed that it affords a good support for the trigger hand. The dimensions of the stock are as follows: Length, thirteen and one-half inches; drop at the heel, two inches; drop at the comb, one and three-eighths

inches. The barrel is chambered for the .22 long rifle cartridge and the sights are patterned closely after those of the English service rifle. The rear sight is adjustable for elevations up to two hundred yards; it is located seventeen inches from the marksman's eye and an equal distance from the front sight. The rifle measures forty-two inches over all, is perfectly balanced and is provided with a pair of excellent sling swivels. The barrel is thirteen-sixteenths of an inch in diameter for its entire length, which gives a muzzle weight that is lacking in short tapered barrels but is essential to close holding. The receiver is only one-thirty-seconds of an inch larger than the diameter of the barrel, thus giving a uniform and unbroken sighting plane. Notwithstanding the diminutive bore it is every inch a rifle. The unique rifle is the property of Mr. Paul B. Jenkins, who purchased it while abroad recently. Like all English arms, it bears the proof mark. The barrel is stamped Cogswell & Harrison, London, and the receiver bears the inscription New Cerius Regd.

## ANSWERS TO CORRESPONDENTS

### THE MAXIM SILENCER

EDITOR GUN DEPARTMENT: I think I should like to use a Maxim Silencer on my .35 self-loading Remington. Do you think it practical for deer hunting, and can it be secured, ready fitted, for the rifle. Very truly, P. E. DEMILLS.

[I referred Mr. DeMills' letter to the Maxim people who wrote him direct as follows: "We are in receipt of your letter written to Mr. Kane, of the Outer's Book, which has been turned over to us for a reply. The Maxim Silencer at present is only adapted for use on rifles and we can equip all rifles with the exception of the Remington Auto-loading gun. We are experimenting with a silencer for this rifle, and expect to have it on the market in several months. We are also experimenting with a silencer adapted for use on shotguns, and

expect to have it on the market very soon. The difficulty with the Remington, you understand, is due to the recoiling barrel, which requires a different type of silencer. It is entirely possible to build a silencer for this, but we have been so rushed with other work that we have not had time to perfect it. We are placing your name on record, and will write you when we are ready to receive your order for this type of silencer."—R. A. K.]

### THE POCKET GUN

EDITOR GUN DEPARTMENT: If the general run of thinking readers were to assimilate Mr. L. D. Whittemore's letter on the Pocket Gun, in its entirety, where would some, or even all of our revolver clubs scattered throughout the country



wind up? By disbanding, of course. The old adage, "What is one man's food is another's poison," applies here just as it does in its original place. Mr. W. refers (supposedly) to Mr. Haines' efforts to get the S. A. swingout cylinder revolver produced, and I believe also that several of the prominent revolver enthusiasts' ideas were embodied in Mr. Haines' design. In reading the numerous articles on the subject I do not remember seeing one reference to the new design being better adapted to killing a fellow man than any other. Self-preservation is the first law, etc., and seems to apply here only, and to this end only also, is there the remotest idea that the new design would be used against man. The military experts have decided for the double action for the service, and this fact removes the remaining opportunity to use the new (so called) gun for homicide, with all its various ramifications. Where would our mechanical, electrical and chemical world be today, if someone was not working up "something new?"

Our sporting magazines, one and all, are leading men, women and children toward the open air, active life, for what it may give in recreation, healthy minds and bodies, and revolver and pistol shooting, along with the rifle and shotgun, are among the foremost pastimes urged, and nowhere can we find evidence of retrogression to cannibalism, or savage tendencies through their use.

Mr. Whittemore has cited an accident to his brother by a revolver shot, but that gentleman must have been pointing the revolver toward himself, instead of away; so the revolver should not be held for the entire fault. Accidents will happen, in any walk of life, but when they happen with firearms, it is usually a case of carelessness or lack of knowledge of the weapon. Just how it is possible to raise the .22 caliber rifle and the shotgun to the "safe" plane (comparatively speaking) and leave the revolver out of the discussion, is hardly in line with the number of small boys (four or five in this city lately) injured by .22 caliber rifles, and those "experienced" hunters who pull a shotgun through a fence or about a boat, loaded, by the muzzle.

So far as the fact that the revolver or pistol is not a game getting gun goes, that is too broad to apply generally. I have personal acquaintance with two gentlemen who do not carry a rifle into the big woods for their fall hunting trip. I also believe Mr. Haines uses a revolver for hunting considerably, and without doubt many others, some of whom, too, are not able to get 80 per cent of their shots in a 50-yard bull. If I, myself, could get started with 80 per cent of my shots in an 8-inch bull at 50 yards, I should keep steadily plugging until I could get the entire string in, and then strive toward equal results in the smaller, and more elusive centers of the big bull. Careful perusal of the revolver and pistol scores in Arms and the Man, made largely by non-military men—by doctors, lawyers and other professional men, with an occasional woman's first rate score—does not indicate a baneful effect with the small gun.

As to the automatic pistol being so far bad, Gen. Drain's editorial in Arms and the Man, discussing Mr. DeAngelis' article on the automatic shows where the wind blows in the automatic pistol direction. I have copies of the government tests on the revolvers and auto pistols submitted

to the board, and the main criticism against the auto is an uncertainty of positive functioning, with the necessity or possibility of requiring a second hand (this in cavalry use) to prepare for firing the first shot, all as compared with the double action revolver, already so familiar to the military man. The persistence of the government toward automatic pistols rather casts doubt on the statement that they are "an abomination, etc.," and the fact that an issue of automatics was returned to the factory for correction in some particular, and returned to the government for reissue and further trial, also helps the cause of the automatic.

I have two single shot pistols, a revolver, a Luger auto, two high power rifles, two target rifles, and a small machine shop to go along with them. On these bright, crisp October days, my wife, little girl and I, start out into the surrounding country with a lunch, kick up the fallen leaves and pick up nuts until our stomachs call a halt. I always carry my Luger, and my wife shoots this quite well, but I never carry a heavy rifle, nor a heavy shotgun with three or four pounds of ammunition. Come again, Mr. Whittemore. Yours truly,

F. B. JOHNSON.

### SHARP POINT PENETRATION

EDITOR GUN DEPARTMENT: Yesterday, while firing a new Springfield rifle with Frankfort Arsenal, 1908, ammunition (sharp point bullets), I was amazed to find that none of the bullets pierced a black oak sapling that was only 6½ inches thick. The distance was 18 yards. Being accustomed to the Krag cartridge, which would pierce a 20-inch oak at that distance, I could hardly believe my eyes. On chopping the sapling and splitting it, we found that the average penetration was only 4½ inches. The bullets were not deformed at the

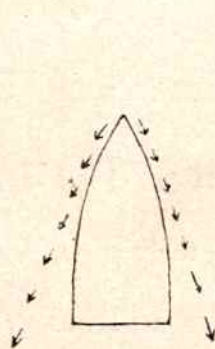


Fig. 1

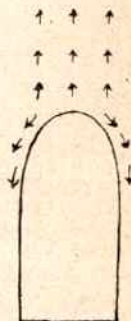


Fig. 2

point, but had lost the bearing part of the jacket and nearly every trace of lead. The front of jacket, back to the shoulder, was empty and had been squeezed flat, lengthwise. Bits of lead recovered from the tree showed no sign of melting. In spongy wood, such as soft pine, the penetration of the Springfield bullets was as great as we had expected. But I was dumbfounded, and so were my companions, by the proof that a sharp point bullet,



driven at some 2700 feet a second, would not pierce green oak timber any farther than a good revolver.

Various theories were suggested, but it seems to me that the true explanation is this:—

A short, sharp pointed bullet acts as a wedge. It spreads the fibers for a considerable distance all around as in Fig. 1. A blunt pointed bullet, on the contrary, acts as a punch. It has little more to do than to drive ahead of it a cylinder of its own diameter, as in Fig. 2.

In splitting a tough log with a wedge you must give light taps with the maul. If you strike hard, the wedge will fly out backward from the cleft. So the short, sharp pointed bullet, driven at high velocity, when it enters a tough and springy substance, acts as a wedge until the pressure on its sides is too great for the bullet to bear. The lead is then squeezed out to the rear and the jacket is disrupted.

The sharp point, however, is the best shape for penetrating an easily yielding medium, such as air, or flesh, or spongy wood—anything, in short, that is not firm enough to crush the sides of the bullet and squirt the lead out backward.

It was suggested by a companion that the penetration of the sharp point in firm substances would be greater at long range, owing to reduced velocity; but the bullet would still be acting as a wedge from the very moment of contact, and its sides would be subject to enormous crushing strain. It seems to be safe, once more, for a soldier to get behind a hardwood tree.

Yours truly,  
HORACE KEPHART.

## RELOADING FOR THE SAVAGE

EDITOR GUN DEPARTMENT: I have read Sandy's inquiry regarding reloading the .32-40 Savage in the August number, and Mr. J. E. Taylor's interesting article in the September number.

I have a .32-40, 26-inch barrel, take down Savage equipped with the Lyman peep, Lyman folding leaf and Sheard gold bead front sights.

I have done some reloading for this arm and use the Savage reloading tool and Ideal bullet moulds. For this cartridge I like the Savage tool better than the Ideal tools and I have loaded a few .32-40 cartridges with an Ideal No. 10 special tool for 8 m.m. Mannlicher cartridges. Just took out the priming hook and found it worked allright. I resize shells fired with regular and H. P. loads with the Savage tool before reloading. Shells used for short range loads do not need resizing. I did not care to buy an Ideal shell resizer and the muzzle resizer would probably make the shells bottle necks. I do not resize any bullets.

With Ideal bullet No. 319,247, 110 grain weight I have used 9 grains by weight of Du Pont No. 1, also DuPont Schuetzen, which is just as good or better for this bullet and the powder is much cheaper. Have used six grains, by weight, Sharpshooter, but it did not burn clean. Am now using six grains weight, Savage No. 2 and like it. I am only a fair shot, but with six grain Savage No. 2 or nine grain Schuetzen, and shooting from improvised rest, I have made 2½-inch groups at 50 yards.

For mid-range loads I use Ideal bullet No. 319,247, 165 grain. With this bullet I have used 16 grains Dupont No. 1, 12 grains Sharpshooter,

16 grains Schuetzen and 32 grains King's smokeless F. G. I have done a little better shooting with Schuetzen than with either No. 1 or Sharpshooter. My first shooting with semi-smokeless was very poor but of late have done as well with it as with Schuetzen. I first tried F. F. G., but it gave rather high pressure and is not so accurate in my rifle as F. G. Have used a few Peters factory cartridges loaded with semi-smokeless and didn't get good results then. Probably because I might have used them just after shooting H. P. loads.

Semi-smokeless or Schuetzen may be accurately measured with the L. & R. micrometer measure, but I couldn't do even fair shooting, loading Sharpshooter with that measure. Have since bought scales and weigh dense powder charges. The instructions on the Sharpshooter cans say ¼ dram or 12 grains for the .32-40. I found ¼ dram by measure weighed about 15 grains.

The barrel of my rifle calibrates .321 and I had a mould for bullet No. 319,295 made a trifle large. When cast one part tin to ten of lead, the bullet weighs 175 grains. With this bullet I used 24 grains weight, Savage No. 1 powder and got results about equal to 26 grains No. 1 with the 165 grains U. M. C. soft point bullet, 25 grains Savage No. 1 gave too high velocity.

Judging from the primers the gas check-load gave much lower pressures than hand loaded cartridges with 26 grains No. 1 and soft point bullets, although the factory bullets were lighter.

I bought new U. M. C., H. P. shells for loading with gas check bullets and used U. M. C. No. 9 primers. I use the No. 9 primer with all loads, including semi-smokeless. Have been told the No. 9 does not do so well with short range loads, but I have used U. M. C. No. 7½ and No. 8½ primers with light loads and the No. 9 does just as well for me. Have shot Savage and U. M. C., H. P. cartridges and see no difference in the shooting. The fired shells may be repeatedly reloaded with short and mid-range loads. For the gun crank who likes to experiment, the .32-40 Savage is, I believe, the best rifle in the medium H. P. class.

Yours truly,

E. H. McCABE, JR.

## AUXILIARY BARRELS

EDITOR GUN DEPARTMENT: In the October issue there is a request from Mr. W. L. Parker for information as to where he can purchase the auxiliary rifle barrels from three to six inches long. Very likely he refers to the "rifled bullet shell" made by Elterich & Co., 17 John St., New York. That was their address some years ago. These tubes are made in 2½, 4, 6 and 10 inches, for .32 S. & W., .38 S. & W., .32-20 and .32-40.

In case Mr. Parker finds they are no longer made, I have one for .32-20, six inches long that I will part with without much persuasion, for as a rifle it did not meet my expectations.

It may interest Mr. MacQueen and many others who want a .22 caliber auto pistol, to know that in case they can not get the article they want that the Colt people are considering putting out a revolver on the lines of the police positive to take the .22 W. R. F. cartridge, in case there are indications of a sufficient demand to justify the manufacture. Their representative had one made



up by hand, at Camp Perry this year and those interested are urged to write to the company, so that a decent showing of those wanting a man's size .22 will be made.

E. L. STEVENSON.

### AUTOMATIC ACTIONS

EDITOR GUN DEPARTMENT: Please inform me whether an automatic rifle will discharge automatically after it has been shot once without again releasing the trigger; that is, will it continue if the trigger is held back, until the gun empties itself. Yours,

E. B.

[In all American makes of automatic sporting rifles, shotguns, and pistols, the trigger is pulled for each and every shot. The weapon is functioned by hand for the first shot; this leaves a loaded shell in the chamber of the barrel, the action closed, and the hammer cocked. The trigger is then pulled, the chamber pressure functions the arm leaving it loaded, closed and cocked as before. The trigger must be pressed once for each discharge. Holding back the trigger has no effect on automatic arms of the sporting type. It has, however, on military automatic rapid fire guns, many types of which will continue a high speed fire until the ammunition is exhausted by simply holding or locking the trigger back. In the latter style of gun the cartridges are fed into the action by gravity, spring clips, or belts.—R. A. K.]

### RELOADING CARTRIDGES

EDITOR GUN DEPARTMENT: I do not pose as being an authority on reloading cartridges for modern fire arms, but I have had some experience along that line and I am prompted to publish my methods with a view to help other ambitious rifle shooters who are in no way related to a generous ammunition manufacturer. I have been a lover of the rifle for several years. When I first began to shoot, I soon discovered that it required considerable ammunition to develop a good shot and, as it is rather an expensive commodity, I determined to try and reload my own shells. I consulted several of the manufacturers on the subject of reloading and was informed that it could not be done successfully. I determined to try, however, and at once wrote to the rifleman's friend, Mr. J. H. Barlow of the Ideal Manufacturing Co., New Haven, Connecticut. He sent me the necessary tools and that which was just as necessary, simple directions for their use, and a copy of his hand book, and then "I went to it." I will say as a preliminary that it is useless to expect good results without good tools, so I bought a complete set of Ideal tools, and from the first got good results. My rifle is a .35 caliber Remington auto-loader and I used the Ideal bullet No. 358315 for general purposes; just as I would have used the regular factory loads. I have frequently put the factory and my reloaded shell in the clips alternately and could not tell the difference when fired without looking at the primer. I used Ideal No. 10 tool with double adjustable chamber. I do not crimp at all for target work and for hunting in the hills crimp but lightly in the forward groove. I use Ideal bullet lubricator and sizer

No. 1, as it places the gas checks at the same time. I size to 359 thousands and resize my shells inside and out every time I use them; outside first and then inside. I use the U. M. C. No. 9 non-mercuric primer washing the shells carefully after each firing. By so doing the shells may be reloaded many times. Sometimes my reloaded shells will split in various unexpected ways, but mostly at the neck. I have reloaded thousands of shells and have never had to use a broken shell extractor but once. I use Ideal powder measure No. 5 and set it for 38 grains black powder, which gives me 28 grains DuPont .30 caliber granular, and the same of L. & R. Lightning. In reloading I use an Ideal re- and de-capper No. 2, and for convenience and to prevent the rimless shell from tipping over I have a hard wood block oblong in shape that holds 50 shells seated to the depth of  $\frac{1}{4}$  of an inch. With this very convenient outfit it is a real pleasure to reload ones cartridges. Thus it is possible to vary one's loads at will to meet the requirements of the game field or the target range. Last year I spent several weeks in the hills after big game, our party secured its legal limit and my four were secured with the .35 Remington auto-loader and reloaded ammunition. I have made several targets with my reloaded shells that were very satisfactory; friends who were present pronounced them equal to anything they had ever seen. My rifle is sighted with an ivory bead front and Marble rear peep sight.

Yours truly,

L. B. D.

### PREFERS RESULTS

EDITOR GUN DEPARTMENT: I have read so much of the merits and demerits of various rifles, in the sportsmen's journals of late, that I am inclined to think something has been omitted. It is always that d—d gun when an inexcusable miss has been made and "my trusty piece and the dandy shot I made," when a fairly good shot has been scored.

Now, doesn't more depend on the skill and gumption of the man behind the gun than on any technical difference in the methods of opening and closing the breech? I once hunted deer with a man from Chicago who carried a rifle valued at one hundred and fifty dollars and saw him miss a broad side shot at a standing buck less than twenty yards distant. His first exclamation was "That d—d rifle isn't sighted right." I afterwards targeted the arm at the same distance and found it absolutely perfect. My own rifle cost but fifteen dollars and with it I killed a two hundred-pound buck at over one hundred yards. It is not the difference in the price of the arms, or the difference between a bolt or lever operated mechanism that gets the game, it is the properly aimed bullet from a good serviceable weapon of appropriate caliber and energy. Being anxious that my friend should be successful and secure a deer I placed him in a favorable position on a much frequented cross runway and secluded myself where I could watch the result. When the coveted buck did show up my friend discharged one shell at easy range and immediately pumped out every cartridge in the magazine without pulling the trigger. Let some of your scientific rifle experts write something that will help the novice to make himself immune



from buck fever. During my twenty years experience as a deer hunter, I have had but one shell jam or stick in the chamber of my rifle, and that was one which I had reloaded myself. I filled it full of smokeless powder and then forced an unresized bullet into the shell. I wonder why it stuck? I have seen a man use a fine rifle barrel as a lever to pry logs apart in order to get at a mink. It wouldn't require much of a philosopher or a soothsayer to discover the reason why that rifle, so accurate at the home target range, would miss a deer at short range. Now, Mr. Kane, can't you swing the drift of the talk of these excellent writers from technical descriptions of complicated mechanisms, to interesting stories of what they have done with their rifles. Most of us, I think, would rather read of the things that have been done. When I was a lad of ten, I was allowed the use of firearms such as, in those days, were to be found in almost every farm house, and I thought that being able to handle a gun, "I was the only rooster on the fence." One day I loaded the old muzzle loader pretty full and strutted off to the swimmin' hole to get a shot at ducks which sometimes settled there; before I reached there, however, I spied a squirrel in an old shell bark hickory, and thinking that it would look pretty big to bring in a squirrel, determined to try a shot at him, resting the old timer in a forked hickory I let her talk. I heard what she said, but for a long time couldn't understand how it was that I had only the stock left. The old hickory still bears the scar and I have the pieces of the wrecked gun to verify my story. Perhaps if, as a boy, I had heard more about what would be a proper load for a gun, I might still have the old fusee. What can you do with your rifles outside of using them to criticise and find fault with? Yours,

L. A. BURROW.

### A FEW QUESTIONS

EDITOR GUN DEPARTMENT: I wish to ask a few questions, and add my mite to assist others in making their selection of a safe and durable rifle. For all 'round work I prefer the Savage .32-40, but for snap shooting at deer or bear in the thick cover of a woods and mountains, the .35 caliber Remington auto-loader is best. For long range shooting and for a protracted mountain trip after big game, the Krag is best, as it is always ready for business and requires no petting. I have used most of the black powder cartridges, including the .45-90, but must say that I prefer the .45-70 in a model 1886 Winchester to anything in that line. I have seen most of the later models of different makes jam, an experience I have never had with my Krag. I have never seen the New Springfield and would like to know if it will shoot the same cartridges as the Krag. Which would be the better arm to take on a long hard trip remote from the base of supplies and a hundred miles or more from the nearest gun repair shop, the New Springfield, the Mauser or the

Mannlicher? The cut of the proposed .22 caliber automatic pistol as published in the October number of the Outer's would just about suit me, although I would prefer a longer barrel, say about eight inches. I carry a ten-inch barrel .25 caliber Stevens pistol, in addition to my heavy rifle, as a small game getter, but being but a single shot weapon they are slow. One automatic pistol of the model and caliber as outlined by you would just suit me, and I believe every shooter would want one. As an auxiliary to the heavy game rifle it would save the heavy and expensive rifle ammunition, dispense with the miniature loads and develop expert pistol as well as rifle shots, and prove a never-failing source of amusement in camp. Yours,

J. M. T.

[Your choice of arms for your locality is sufficient evidence that you are a practical man and impartial to the different types of mechanisms. Every rifle placed on the market at the present time by reputable manufacturers, either foreign or domestic, may be depended upon if only common sense is exercised in their use. Each individual type has some particular feature to commend it. The New Springfield, the Mauser, and the Mannlicher of different models, are all arms that may be depended upon under the most exacting conditions; there is, however, one advantage in using a domestic made gun. In the event of a breakdown it would be easier to duplicate the broken parts than in the case of a foreign made arm. The New Springfield is chambered for the 1906 ammunition. It is a rimless shell and entirely different from the flanged shell used in the Krag.—R. A. K.]

### WHO CAN ANSWER?

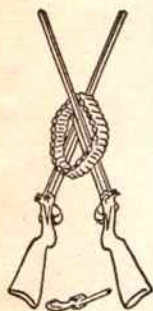
EDITOR GUN DEPARTMENT: Will you kindly advise me whether there is a gun made having in combination a twelve or sixteen gauge shotgun barrel with a .22 caliber rifle barrel?

I am familiar with the gun manufactured by the Marble Company of Gladstone, Michigan, but this is not what I am after. I know also of guns having in combination "full-grown" shotgun barrels with large caliber rifle barrels, but I cannot seem to find the combination first referred to—12 or 16 shotgun barrel with .22 caliber rifle barrel.

Yours, very truly,  
F. M. FERNSTROM.

[I know of no manufacturer at the present time who makes a 12 or 16 gauge shotgun in combination with a .22 caliber. The Royal Arms Company of Wheeling, West Virginia, and the Daley Three-Barrel Gun Company, make high grade shotguns in combination with rifle barrels chambered for center fire cartridges. Among other the 25-20, the 32-40 and the 38-55 I would suggest that you communicate with the firms named, they might build a gun for you according to your specification. The combination which you have described would be a most desirable one in some localities.—R. A. K.]

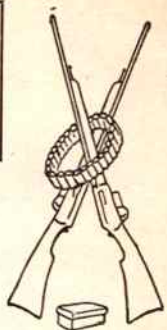




## GUNS AND AMMUNITION

EDITED BY ROBERT A. KANE

This department is intended to be a place for the exchange and discussion of views on any subject pertaining to arms and ammunition, from which no one with an idea to advance shall be barred. The only conditions are that the opinion must not be manifestly absurd, that it be expressed in courteous language and that no personalities be indulged in. Each opinion is printed for what it is worth and its publication does not commit the editor to the view expressed. The widest range will be permitted and our readers are invited to make free use of these pages, but it is important to remember that *under no circumstances will personalities ever be permitted.*

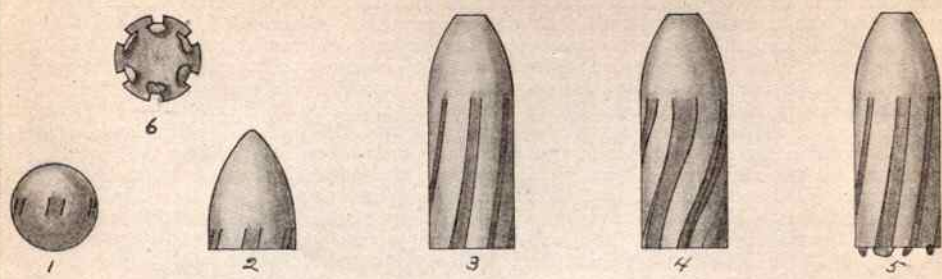


### UNIFORM OR GAIN TWIST?

IN the days of abnormally long rifle barrels, slow twist, black powder, and bullets having a short bearing on the rifling, the gain twist system of rifling barrels was more commonly used than at the present time. In fact I know of no American manufacturer who makes use of the gain twist system in the rifling of barrels calculated for the use of modern ammunition. It is a fact that some of the most accurate target shooting known to the craft, was done with arms rifled according to the gain twist system. However, it does not appear that rifles made with equal care and workmanship, and rifled with a uniform twist, would not have given equal accuracy under like conditions. The fact that the uniform twist system of rifling barrels has survived through an era of test, and experiment, during which revolutionary theories as to explosives and projectiles were worked out, proves its superiority under varying conditions. The partisans of the gain twist claim that by its use the rotary motion or spin is imparted to the bullet in a gradual and ever increasing ratio, so that the bullet leaves the muzzle at its maximum speed and without wobbling on its long axis. It is maintained by champions of the uniform twist system of rifling that the same result is obtained by the ever accelerating force of powder gases, generating and expanding behind the bullet. It is a demonstrated fact that a bullet controlled by any system of rifling does not reach its maximum velocity until after it leaves the muzzle of the rifle. It is evident that with the gain twist a certain amount of stripping takes place as the bullet is driven against the ever changing pitch of the rifling. This may be easily demonstrated by pushing a bullet having a long true cylinder bearing, through the bore of a gain twist rifle. An examination of the bullet will show that the grooves cut in the bullet by the lands of the barrel, are slightly broadened at each end while the lands on the bullet left by the grooves of the barrel are correspondingly narrowed at each

end. Thus we see that it would only require a barrel of a certain length and the gain twist would ultimately strip the bullet completely. With the uniform twist there is no displacement of lead or defacement of the bullet except what is necessary to receive the lands of the barrel at the breech at the instant of upset, after which no change takes place until the bullet has left the barrel. It has been shown by Mr. Perry D. Kent with his muzzle venting process, and by Hiram Percy Maxim with his silencer, that it does not adversely affect the accuracy, range or penetration, of rifled arms, to relieve the pressure slightly, or arrest the gases entirely at the muzzle. This demonstrated fact is slightly at variance with the theory of the gain twist. Many of the target rifles of muzzle loading days were rifled with a gain twist; loaded with a moderate charge of powder and a round or a conical ball having a short bearing on the rifling. When used with a buckskin or linen patch in the comparatively slow pitch, under these conditions, the increasing twist cutting its way through the short bearing on the surface of the bullet could make but little difference and indeed might be an advantage unless the twist of the rifling were increased to such a degree that the bullet would be driven over the lands near the muzzle. Some of the advantages of loading from the muzzle are that the act of pressing the bullet home, cleans the bore and leaves it in exactly the same condition for each succeeding shot. The base of the bullet is not deformed as would be the case if the bullet were seated from the breech, ahead of the chamber, and the bullet will naturally follow the rifling in inverse order from the direction of loading and with less friction. When a bullet with a long bearing such as is used in modern target rifle, is loaded from the muzzle, using a false muzzle and a rifle with uniform twist, the bullet reaches its position ahead of the chamber in perfect condition except for the small amount of lead cut from it by the lands at the





No. 1—Round ball, showing impression of gain twist. No. 2—Conical bullet, showing short bearing of gain twist rifling. No. 3—Bullet seated from the muzzle, showing impression of uniform twist and perfect base. No. 4—Bullet with long cylinder bearing seated from the muzzle of a rifle having a gain twist. No. 5—Showing the displacement of lead caused by seating a bullet from the breech. No. 6—Base view of No. 5. All these cuts are exaggerated, the better to illustrate the text.

muzzle while being started by the plunger in the false muzzle. The passage of the bullet with its long bearing, engaged at every point by the uniform twist during the process of seating the bullet from the muzzle is the best scheme yet devised for placing the bullet in the barrel with its long axis true to the center of the bore; unless the bullet travels through the bore, and leaves the muzzle with its long axis perfectly parallel with long axis of the bore, accuracy need not be expected with any system of rifling. Excellent results have been obtained by seating the bullet in the lands flush with the forward end of the chamber. When the bullet is of proper diameter and is seated in this manner it is perfectly gas tight. There is, however, a possibility that the delivery at the muzzle may be affected by the action of unequal gas pressure on the imperfect base of the bullet. The effect of seating the bullet from the breech is to force back the lead displaced by the lands, leaving it in the form of little bulges on the base of the bullet at the rear end of each land. When the bullet is seated from the muzzle this condition is absent, as the lands of the barrel carry the displaced lead forward to where the bullet begins to taper. It then ceases to be a factor. To secure accuracy with any system of rifling the base of the bullet should be absolutely perfect, there should be no serrated edges caused by lead being crowded back as the tight fitting bullet is forced into the rifling. The bullet should be seated true to the axis of the bore and perfectly gas tight. A slight deformity of the bullet at the point may not seriously affect the accuracy of its flight but the slightest deformity at the base is sure to do so. This theory may be easily proved by the following test. Cut a small shaving of lead from the point of the bullet at one side leaving a slight bevel; on firing it will be observed that the accuracy is not seriously affected as the spin or rotary motion of the bullet corrects its tendency to deviate from a direct line by presenting the deformed side of the bullet to the deflecting influence of the atmosphere impartially from every direction. Now cut an equal amount of lead from the edge of the base of a bullet on one side and watch the result when the rifle is fired. When the bullet under the tremendous pressure of the gas reaches the muzzle, the gas rushes to the slight opening caused by the beveled side of the bullet where, acting as a wedge, it deflects the

base of the bullet in an opposite direction throwing it off its balance sometimes causing a keyhole in the target, a miss, or a spiral flight. I have frequently examined bullets that had been pushed from muzzle to breech through rifles having a uniform twist. In most instances I have noticed that where the bullet begins to taper and the point of contact of the rifling on the bullet ceases, the impression of the rifling stops at a uniform distance on all sides of the bullet thus proving that the projectile was true with the axis of the bore, or in the vernacular of the craft, "well centered." In the case of bullets seated from the breech this much to be desired condition is not so easily obtained except when using bullets with a long, true cylinder bearing having a dirt catching shoulder. With the latter model of bullet variations from true center do not occur as frequently as with shorter bearing and gradually tapered bullets. To those observing rifle men who have given sufficient study to this interesting subject to have formed an opinion, no doubt a majority would agree that it would be impossible to pass a bullet through a gain twist rifle without a certain distortion of the bullet. The principle may be illustrated by trying to apply a nut to a bolt of the same size but of slightly different thread; the result is usually a crossed or destroyed screw. In the case of the gain twist the effort of the bullet to follow the constantly changing pitch of the rifling causes a widening of the grooves in the softer metal of the bullet at each end. Therefore if the bullet fits the rifling at the breech it will not do so at the muzzle the grooves cut in the bullet will be enlarged creating a condition favorable to gas cutting and consequent inaccuracy. There is little danger of a bullet stripping in any kind of twist where the powder charge is not excessive and the bullet is properly tempered. It is surprising how shallow the rifling may be and still retain a sufficient grip of the bullet to prevent stripping. No less an authority than Mr. Pope, the famous expert and barrel maker is authority for the statement that "If a regular .32 smooth bore be placed in a rifling machine and the rifling head be exchanged for a lead plug containing coarse emery, the slight scratches made on the inside of the barrel are sufficient to properly rotate or spin the normal projectile for this bore, and the rifle, for a few shots will do fair work." Experiments conducted by F. G. Mann and his



associates, 1894-1908, show that a .32-40-200 bullet tempered 1 to 30 seated one-fourth of an inch into rifling with a 16-inch twist will hold without stripping until the bullet is literally twisted in two. This would seem like an argument for bullets with a short bearing but it must be remembered that to secure uniform accuracy sufficient bearing must be given the bullet to center it perfectly. Let us assume for the sake of argument that the rifle we are using is bored with an initial twist of one turn in 36 inches and a final twist of one turn in 18 inches. Obviously, the performance of the rifle would be calculated on the basis of an 18-inch twist, as it has been shown that the bullet will not jump the rifling except under certain conditions not present with the combination of barrel and bullet here described, it would seem that the two standards of pitch in the one barrel were wholly unnecessary. It would be logical to expect superior accuracy from a barrel having a uniform twist, a perfectly fitting and correctly centered bullet than from one that has an ever changing twist to deform the bullet, a serrated base or a short bearing that permits the bullet to be displaced from true center by an uneven upset.

The study of ballistics, as applied to high power small arm for the past twenty years, seems to have practically eliminated the gain twist as a factor to be considered in modern rifle building. Some of our heavy ordnance is rifled according to that system but the rotary motion is imparted to the projectile through the medium of soft metal bands around the projectile which have a short contact surface on the multi-groove system of rifling. The wonderful results obtained with our uniform twist rifle, sharp pointed bullets, and modern explosives, would indicate that our ballistic engineers are on the right trail. However, it is by no means settled that the gain twist has passed forever. Military people are rapidly reducing the weight of their bullets and, contrary to theories formerly entertained, are improving the range and accuracy of their small arms. It is therefore just within the possibilities that if we persist in our effort to still further increase the velocity and range of our small arms by reducing the weight of the bullet, it must be made shorter, and sharper, with less bearing on the barrel requiring a quicker twist.

## SMALL BORE REPEATING SHOTGUNS

By "ALMO"

SEVERAL delayed copies of the Indian Field come to hand, and in them I found a deeply interesting article on choke boring .360 and .410 bore shotguns. Among my motley collection of fire arms was a fine old Model 1886 Winchester rifle, whose barrel had long since been worn out in many a strenuous chase after bear and antelope. It's beautifully figured Italian walnut stock had saved it from ignominious sale when the barrel was no longer dependable at the varying distances at which game must be shot on mountain and plain in the great Southwest. An expert workman from Leigh, Belgium, had previously case hardened the bolt and all the wearing parts to correspond to the exquisitely engraved receiver, which was also case hardened and clouded in a most attractive manner, and showed little effects of wear. When the barrel was bored out it would take the .45-90 Winchester shell. The barrel was bored to within half an inch of muzzle, leaving a rather heavy choke. The chamber was bored, and the cartridge guides fitted for the .45 cartridge. I then took a piece of hardwood and made a ten-hole loading block. A box of .28 bore paper shells R.23 B.5. one cut open to get a load; measure made from an old one to hold scant 14 grains, and another to hold  $\frac{1}{4}$  of an ounce of shot. A box of 10 gauge pink edge wads cut to the right size with a half-inch leather punch. I then loaded the only ten shells I could find. A Kynoch English Crimper, 28 gauge, made a fair crimp to hold shot wad. I took the little repeater to the target, and to my delight and amazement, it made a 75 per cent pattern. Then the old rifle got a vigorous treatment with checkering file, and oil rubbing into the stock. The barrel was turned down outside from the half octagon to the muzzle, leaving the latter about half the original thickness. The bore was then lapped out with lead and emery; this brought

the pattern to about 70 per cent. After the work was done and the barrel was finished with the scratch brush and plenty of rubbing, I stood the gun in a position for a thorough inspection. It certainly looked good to me and might easily have been mistaken for a product of Bond Street, London. What a snipe gun it was! After trying it on various other small game, I am not surprised at the popularity of such small bores on snipe in the hot climate of India as used by the English army officers.

Some years ago, I fitted a .20 bore barrel to a repeating gun and for a time my mail was flooded as was also that of the manufacturers, but the arm has not yet materialized. Many of the Model 1886 Winchesters are behind the times as rifles. The light weight .45-70's make the best .500 caliber repeaters when bored out for the .50-100 cartridge. Any expert machinist or gun smith can do the work in a satisfactory manner. A new Model 1886 light weight, half magazine, makes as handsome a 6½-pound gun as one could desire. The barrel is nickel steel and takes the .45 Government cartridge. When bored to .50-100 it will hold all the powder and shot that the bore will handle properly. I have ordered a Silver's recoil pad applied to mine, as the standard stock is too short. Many of these rifles are made to take down, making a very handy gun for a long trip, enabling one to pack readily. With a solid round ball of proper size it is a knock-down, stay down, killer on dangerous game and surprisingly accurate up to 50 yards. No doubt the U.M.C. and other ammunition companies would make paper shells to fit the .50-100 guns if the demand would justify the expense of the necessary machinery. The imported shells can be bought from Shoverling, Daly & Gales, sporting goods dealers, whose ad appears in the Outer's Book.



# STILL WANTED—A .22 AUTO PISTOL

**M**OST of the best known enthusiasts and experts on fire arms and many of the most eloquent writers, men who are wholly familiar with their subject, and whose names are a powerful lure to readers of the Gun and Ammunition Department, have made valuable suggestions on the subject of the proposed .22 caliber automatic pistol, but thus far not a single voice has been raised in opposition to the scheme. If anything were needed to prove the universal favor with which the plan is regarded by shooting men it could easily be supplied by the timely and sensible suggestions which daily reach the *Outer's Book*. One popular writer, who is as fearless in expression as he is direct and to the point, says: "I am deeply interested in your agitation for a .22 caliber automatic pistol but believe that if you get it for the Winchester .22 caliber autoloading rifle cartridge you are but little better off as far as cartridge is concerned, than with the Colts .25 caliber. The most popular gun would be one to take the .22 smokeless long rifle, on the .22 Stevens-Pope which is simply the long rifle crimped. I think it would be a mistake to get out a .22 caliber arm that uses the expensive ammunition instead of the cheapest. A pistol that would work with the .22 short smokeless would be still better. I am in favor of a gun using cheap ammunition, and then using plenty of it." This is the crux of the whole subject. We want cheap shooting and a first class, up-to-date gun; then anyone may practice often enough and long enough to

evidently an old timer, says: "I am familiar with every shell that has ever been used in a breech loading arm, and while each shell has its good points, and would be satisfactory to a large number of shooters, for myself I would prefer a center fire reloadable shell of .22 caliber; for instance, one like the once popular Maynard .22-10-45." This would be a regular gun crank's combination of gun and ammunition. The cartridge belongs



A BERGMAN MODEL EL

to the always reliable, everlasting variety made of thick heavy brass; it takes the No. 1 and No. 1W primer and can be reloaded any number of times, and with any variation of powder and bullet that the user might desire for hunting, snap shooting, or target. A personal friend of mine, an ideal American sportsman, a genuine gun lover, and the one who first suggested the .22 caliber Colt automatic pistol to the writer, says: "Give us the Colt-Browning pistol, taking the Winchester smokeless and greaseless auto rifle cartridge, even if the ammunition does cost a trifle more. We know that the standard of arms and ammunition as made by the Colt and Winchester people can be depended on, and d—n the expense!" Here is the opinion of a man, who, from love of the type, and long study of the subject of automatic arms of every kind, is entitled to take rank with any man living. His wide knowledge and unbiased views, covering the entire field of automatic arms on two continents, renders his opinion at this time especially valuable, as automatic arms, although they are widely used and practical to a degree nearing perfection, are still in the transition period of their development. Referring to the proposed .22 auto pistol my friend says, "I approve very much as to the model of the .22 auto pistol, but as to the style of the ammunition, I still believe that the rimless cartridge will work better through the magazine than any kind of a shell with a rim, but perhaps this would not be so in a properly constructed model." The point here involved is a vital one in connection with a weapon of the self-functioning type, and cannot be ignored. Accuracy, strength, mobility, marvelous speed of fire, satisfactory facility in refilling the magazine, and compactness in bulk, are well established points, all inherent in, and peculiar to the automatic. Nothing remains to be done to perfect the type except to ensure greater certainty of function. To my mind there is no unsurmountable obstacle to be encountered



A New Model 1909 automatic pistol, the invention of A. W. Schwarzlose, Berlin, Germany. This pistol is unique among fire arms, being constructed on an entirely new principle in-so-far as at the instant of discharge the barrel slides forward instead of backward. The inventor is well without reputation in his chosen field as he is the inventor of the celebrated Schwarzlose machine gun now being introduced into the Austrian Army. The pistol takes the .32 caliber Browning cartridge, has a barrel four inches in length and measures but five and one half inches over all, has a capacity of seven shots in the magazine and weighs about 20 ounces loaded.

become a good marksman and with a safe weapon, which in outline, methods of operation and speed of fire bears some resemblance to what eventually will be, without doubt, the official side arm of our forces. Another loyal friend of the small bore pistol is in favor of the gun being made to take the .22 Winchester rim fire cartridge, giving as his reason that it would make a superior hunting cartridge. One enthusiast, in expressing his preference for a cartridge to use in the new gun,



## The Outer's Book

here, as it is perfectly logical to assume that one piece of machinery can be made as perfect as another; that a fire arm may be made with as great mechanical precision as a type-writer, a knitting machine or a minting stamp. The principle of the automatic hand gun is forever established; there still re-

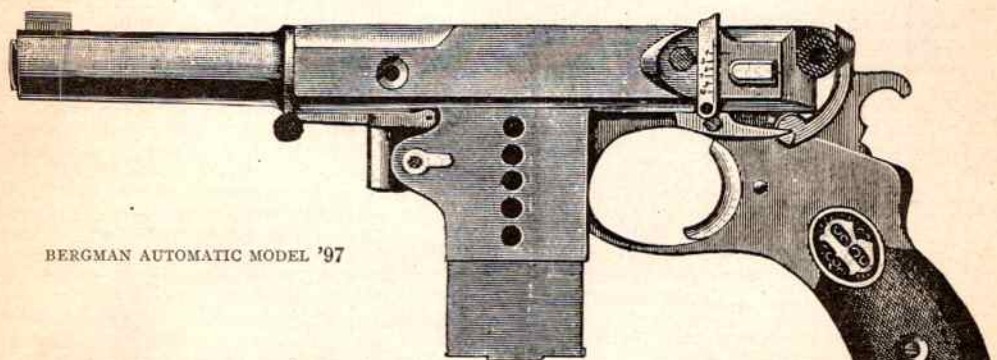
of work, may possess features of special value to it, but not practicable or desirable in a heavier arm. One trouble with most repeating arms is that after the cartridge is stripped from the magazine there is nothing to guide it directly and positively into the chamber; the cartridge has so much



Another Bergman pistol known as Model 1907. This model will be especially interesting to our readers as that it is altogether possible to build an automatic pistol having a grip and outside hammer following closely the graceful lines of our beautiful American revolvers. The magazine of this arm can be made to hold any reasonable number of shots. Built in a weight properly proportioned to the service required of the .22 caliber cartridge; it would seem as if there were infinite possibilities in this model for our proposed small bore automatic pistol.

mains, however, much to be accomplished in the way of improving it in balance and beauty, a better distribution of weight and such modification of working parts as will insure positive and perfect reciprocation of every relative detail of its working mechanism. Among those progressive spirits who are working actively to promote the movement for the new gun is one who has long been identified with everything that stands for the practical and progressive in the development of American arms. He gives his opinion in the following language: "In the new arm you must be careful not to incorporate in the .22 automatic any clip device for loading that will jam. There is at present no satisfactory clip loader in any automatic pistol. To successfully handle ammunition as small as the .22, the magazine should be loaded carefully

play laterally and vertically that soft nosed bullets will sometimes catch against the sharp edges of the chamber, causing a jam. In rifles where the bullet is small and pointed, and the opening or base of the chamber is large, the trouble occurs less frequently. Every repeating fire arm, whether actuated by hand or self-functioned, should be provided with such details of mechanism as would place the cartridge squarely in the chamber, regardless of the shape or character of the bullet or the angle or position at which the weapon may be held. There should be no lost motion, or vacant space, to permit the cartridge to wobble and get out of line. While this applies to every type of repeating and magazine arms it is especially applicable to the pistol as intended for hazardous service. How many of our automatic pistols, or,



BERGMAN AUTOMATIC MODEL '97

one at a time, until full, and the magazine should be fed upward in solid column; not staggered or zigzag, and held firmly in position by the powerful direct pressure of a spiral magazine spring. I have a foreign automatic pistol whose magazine system would furnish inspiration for that feature of the .22 caliber. It has a feed spring many times stronger than any box clip spring, and it is as sure as death or taxes. It would be easy to so improve this system, that single cartridges could be loaded from the bottom and the magazine chamber kept full except during rapid fire practice." This suggestion applies only to the .22 caliber arm, which, being designated for a definite line

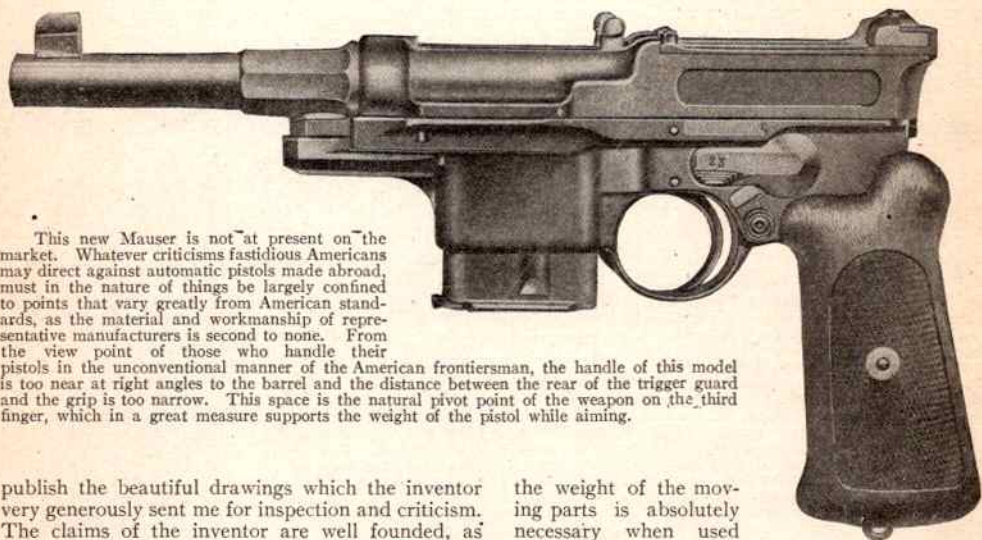
for that matter, our repetition arms of any kind, will function properly if held in any but a strictly conventional position. The pistol of any type, being primarily a weapon of defense at short range, should be absolutely free from faults of construction which might lessen its value as a short range weapon. It should function faultlessly while held at any angle or position. Nothing should be left to chance. A gentleman, who has devoted much



time and intelligent study to fire arms of every kind and whose articles have been widely read and admired, writes as follows: "I agree with all you have said about the .22 caliber automatic pistol, except that I think it would be a mistake to have one with a sliding barrel. A locked breech is not necessary in a .22 and much greater accuracy would be secured with a fixed barrel. I have used the 7.65 m. m. Luger quite a lot for small game, and it does very nicely for the purpose; the chief objection being the price of the factory loads." The suggestion for a fixed barrel is practical, timely, and well taken, and the complaint of the cost of factory ammunition, except the regular .22's, is universal. To prove what is possible in the line of pistol construction, I publish herewith a description of a new pistol, the invention of one who is evidently familiar with his subject. I regret that I cannot at present

the .22 caliber would fill a position without anything to compete with it. The arrangement of the magazine catch permits the quickest and easiest removal of empty magazine and replacing of a full one. The sights are fixed and absolutely stationary as is also the barrel which is true of no other type."

The inventor, who is evidently thoroughly familiar with every detail of his subject, further says: "With regard to the locking device, if the breech is not positively locked, with a cartridge even as small as the .22 automatic, either you must increase the spring tension very greatly, or else increase the weight of the moving parts, and such increase in the first instance would render the action hard to function with one hand, or in the second case, prevent the moving parts being enclosed within the frame. The latter case is shown in that type of automatics in which



This new Mauser is not at present on the market. Whatever criticisms fastidious Americans may direct against automatic pistols made abroad, must in the nature of things be largely confined to points that vary greatly from American standards, as the material and workmanship of representative manufacturers is second to none. From the view point of those who handle their pistols in the unconventional manner of the American frontiersman, the handle of this model is too near at right angles to the barrel and the distance between the rear of the trigger guard and the grip is too narrow. This space is the natural pivot point of the weapon on the third finger, which in a great measure supports the weight of the pistol while aiming.

publish the beautiful drawings which the inventor very generously sent me for inspection and criticism. The claims of the inventor are well founded, as comparison with the drawings will show. They are:

"One hand only required to operate for first shot, or in case of a jam or misfire. Breech is positively locked against force of explosion. Parts are all of substantial size, no small pins and no more parts than Luger or Mauser, can be more easily assembled than any other automatic, as the removable side plate, when off, exposes all parts, which can be removed and replaced without tools. The action permits the use of any length barrel without any change in construction of other parts. Can be adjusted to operate with different loads. Can be instantly changed from automatic action to semi-automatic, in which condition the action is the same as any single action revolver, that is, it must be cocked for each shot, cocking the gun, putting a new cartridge in the chamber ready to fire. It is the only automatic which can be made to have the same model or form and balance as the popular types of revolver such as the Colt army special or the S. & W. Model 1905. It may be constructed as a repeating pistol leaving out the automatic feature and if so made, especially in

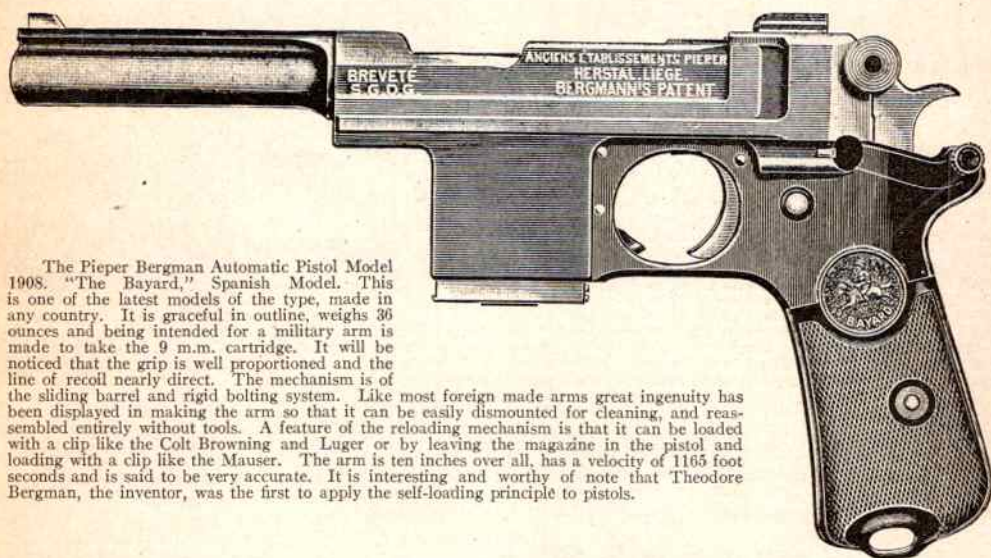
the weight of the moving parts is absolutely necessary when used with light springs. In the Winchester .22 the moving parts could not be reduced in weight unless the springs were increased or the barrel shortened. In connection with a pistol to shoot .22 shorts I can say positively that this cartridge will work in an automatic as well as the .22 automatic cartridges, but the moving parts must not weigh more than a few ounces for a pistol length of barrel. If this fact is borne in mind when designing the gun even the .22 short will give its regular penetration and work all right in every way. Another point in connection with the .22 short which I will try and explain: If the breech is closed but not locked when the hammer falls; the fall of the hammer causes a jar or recoil of the breech and the shell explodes while partly out of the chamber and sticks, causing trouble by bursting and often failing to extract. I have overcome this trouble. I am afraid that most of your readers are more interested in the arms of this type which have been developed further than mine, still there is nothing like asking for what you want, and if we do not have discussion the present types of gun



will be all we will get until the makers of them learn that something else will sell.

The foregoing comments and suggestions are but a few, selected from the many received, but they will serve to show that the subject of automatic hand guns is a live one. There are upwards of thirty pistols of this type known to those who make the subject a study all of which are more or less successful, and each possessing some point of superiority over the others, yet we must, in honesty and fairness, acknowledge that none can be considered near-perfect from the viewpoint of the unprejudiced, hard-headed, practical shooter. Individual criticism of their faults might in some instances, give readers a wrong impression, or seemingly exaggerate minor details of principle, construction or workmanship, yet it is only by test, experiment, and free discussion that we can determine the better types and demonstrate anew the law of "the survival of the fittest." Inventors and makers of fire arms, if they are not

Luger and Browning type of automatics. A glance at the cut of the Schwarzlose autopistol shows the trend of improvement. Here we have an arm measuring but five and one-half inches over all, having a four-inch barrel and a gracefully modeled grip showing unmistakable evidence of a blood relationship with the Colt single action. This is perhaps the first concession to beauty lines and fit yet produced in a self-loading pistol. To carry out the design a little further, and add two inches more to the barrel, making the whole weapon of such weight and balance as would ensure stability in handling, steadiness in aiming, and producing that feeling of life and buoyancy so essential and satisfying in all classes of hand arms, would make the latest candidate pretty near what we want in a .22 caliber. Many people, otherwise rational, seem to regard .22 caliber arms as a mild sort of a kindergarten joke, or, at least, to be considered with good natured tolerance. They should be taken at their full value



The Pieper Bergman Automatic Pistol Model 1908. "The Bayard," Spanish Model. This is one of the latest models of the type, made in any country. It is graceful in outline, weighs 30 ounces and being intended for a military arm is made to take the 9 m.m. cartridge. It will be noticed that the grip is well proportioned and the line of recoil nearly direct. The mechanism is of the sliding barrel and rigid bolting system. Like most foreign made arms great ingenuity has been displayed in making the arm so that it can be easily dismounted for cleaning, and reassembled entirely without tools. A feature of the reloading mechanism is that it can be loaded with a clip like the Colt Browning and Luger or by leaving the magazine in the pistol and loading with a clip like the Mauser. The arm is ten inches over all, has a velocity of 1165 foot seconds and is said to be very accurate. It is interesting and worthy of note that Theodore Bergman, the inventor, was the first to apply the self-loading principle to pistols.

also familiar with the use of them, are not always best qualified to judge of the general utility of the arms. There are many methods of using one hand guns which the inventors and manufacturers never dreamed of; hence the wide difference of opinion in regard to what constitutes a perfect grip, a proper length of barrel, balance and weight. In this, as in most other things, there is a process of constant elimination which makes for perfection of type and model. One of the first models of the automatic pistol was the old fore and aft Borchard, projecting half way up ones arm. Most of them are in museums now. The next issue was materially reduced and was a much handier weapon, but still clumsy as judged by the more pleasing lines of the revolver. As time has evolved and proved the Colt grip, so will it prove the wisdom of the principle of economy of space as exemplified in the

as a valuable auxiliary in the training of our future fighting men. Master the .22 caliber rifle and you have mastered the military and hunting rifle up to the midranges, and when you have exhausted the possibilities of the .22 pistol you have covered the entire field of usefulness of the one hand gun. I believe that this fascinating short gun is gradually nearing a definite type. Our most distinguished engineers and inventors are working toward a common model which will embody and perpetuate those older features which are time tried and the newer ones which are born of genius and common sense. I wish to acknowledge my indebtedness to Mr. T. P. Streit of St. Paul, who has kindly supplied me with valuable data and information on the subject of automatic arms, which would have been difficult to obtain from any other source.



# A BOLT ACTION AFTERMATH

[EDITOR'S NOTE:—Feeling that while it was very interesting and instructive the discussion of the bolt and lever action question was being drawn out to a length that might prove tiresome to our readers, we asked Mr. Crossman and Mr. Newton to bring their argument to a close in the December number, expecting that the subject could then be dropped for the time being. We are in receipt, however, of two contributions that add somewhat to the discussion which we feel should be printed. We are making room for them, and we hope now that our friends will turn to the discussion of some of the other very interesting topics that need threshing out.

## THE HAPPY MEDIUM

By D. O. STEGNER

It is not for me to criticize, but it does seem as if two of the Outer's Book correspondents have been carrying on a wordy war, actuated by personal animosity toward each other rather than by a desire for a frank discussion of the merits of the various styles of actions. It may be that I am partly responsible for this condition of affairs, because, I believe, I started the discussion within the year or so. I must frankly say, however, that I have enjoyed the articles written pro and con on the lever and bolt action arms, and I think that aside from the actual merits of the subjects, considerable ingenuity has been exercised in framing arguments. There are those who prefer the lever actions. I admit I like some of them myself—but it would seem to most of us as if it were "kicking against the bricks" to controvert the findings of the experience-taught ordnance boards of the various nations. Both of these correspondents are evidently familiar with the ordnance reports as published in old "Shooting and Fishing" some years ago, when the present service rifle was in process of development. All mechanisms have their faults, as just these few incidents would tend to show.

Some years ago a Krag jammed so that it was necessary to pry out the cartridge with bayonet point. A 32-40 Savage jammed a shell so tightly in magazine carrier that it took approximately fifteen minutes to loosen it. A 32-40 H. P. Remington-Lee not only jammed the cartridge point so hard against the shoulder of the chamber as to force the metal cased bullet beyond the crease in the shell at the bullet base; but also failed to extract the fired shells so often as to be positively exasperating. A .38-72 Remington-Lee would allow the bolt handle to fly open, or-up partly, so as to make it a gamble whether or not it would allow the bolt to escape backward altogether sometime. A .45-70 extra light Model 1886 Winchester would hold an occasional shell at the mouth of the magazine so that operating the lever produced no results. A .32 Winchester Special I carried on a somewhat prolonged trip rusted so badly in the tubular magazine in spite of what I considered careful usage and protection, that I swore I would get something that I could take apart easier in order to clean. A 7 m. m. Sporting Mauser costing \$50.00 retail, would so often jam soft point

cartridges against the chamber shoulder that I wrote to the American agents in regard to same, and finally found that I could correct this myself by widening the opening at the top of the magazine slightly with a file. And—well I guess that is all that I can relate from my own experience.

I now am using a 7 m. m. Mauser made at Oberndorff, and a Sauer-Mauser 8 m. m., beside a New Springfield at the military range. The Haenel-Mannlicher and Schoenauer-Mannlicher I have not used. I am highly pleased with the 8 m.m. Sauer-Mauser. It is a splendidly finished arm, very accurate and handy to carry, more so than the original Mauser on account of the way the wood of the stock is cut. It functions perfectly and is so readily dissembled and assembled that cleaning and wiping is a pleasure. This latter feature is of course true of the other Mausers and Mannlichers and other bolt actions, I presume. Then considering my own little experience and the findings of the various ordnance boards, I conclude for myself that the bolt action, as exemplified in the Mausers, Mannlichers and New Springfield, is the best suited for my purposes. The Remington-Lee had four locking lugs, two forward and two in the rear, which surely made it strong enough in that respect, but the extractor participating in the rotary motion of the bolt when in action was certainly a failure. The Mausers have three lugs, and in one respect it seems to me are superior to our service rifle, in that the rear lug has its corresponding recess in a more solid part of the receiver. I mentioned once before the desirability of finishing the bore of the New Springfield in a more thorough manner, thus producing a smoother interior surface and allowing the bullet to pass through without so much scraping and friction. The Mausers are finished so smoothly that the metallic fouling is readily removed with brass bristle brushes. Of course none of them, I believe, as furnished for our market, use ammunition of the velocity of our service ammunition, but I am confident that a dollar or two more per weapon spent on the finish of the bore of the New Springfield would obviate much of the trouble in cleaning and the use of acids and solvents, thus preventing much of the corrosion and consequent dissatisfaction.

In regard to speed of operation,—speed is of course desirable, so also are simplicity and strength of action. In my opinion the bolt action as now made is the happy medium. It is constantly



urged that they are slow in operation, but once used and once you are accustomed to them, they are plenty fast enough, with the additional excellent qualities of great strength, simplicity and quick reloading. The only regret I have is that there is no bolt action worthy of the name made in the United States outside of the arsenals. I presume, however, that the time is not distant when the auto-loading will be simplified and perfected and even the bolt action will be relegated to the has-beens, and a new discussion will spring up, and so on *ad finitum*. So, let us not stand in the way of progress for sentiments' sake merely, and let us hope that the names long associated with what we consider best in rifles may soon be associated also with what is modern in construction.

Allow me to add that I want one of those .22 automatic pistols with five or six-inch barrel, if one is put on the market. They would sure be an improvement on the single shot Smith & Wesson pistol for one who practices much.

### FOR TRUTH'S SAKE

By E. L. STEVENSON

In the November Outer's Book I noticed a request from Mr. Newton for details as to the injury of a native in Alaska by a rifle blowing open. This incident which came to my notice was referred to by Mr. Crossman in a former issue. I might as well state in the first place that the gun was not an 1886 Model Winchester but a .44-40 Model 1873. It is very easy for me to see how Mr. Crossman misunderstood me, or perhaps I should say how I misunderstood him. Last winter, before my article in which I mentioned the incident appeared in print, I was in Los Angeles and met Mr. Crossman. In the course of our conversation I spoke of my own experience and that of the young Eskimo, and also of some others I had heard of and an Alaska friend of mine who spoiled a .45-90 Winchester. Part of our conversation took place on a noisy street car, which is not the best place to talk and be understood. I remember that Mr. Crossman asked me about the model of one of our guns I mentioned and I told him a .45-90 Model 1886, meaning the rifle belonging to my friend, though Mr. Crossman may have been inquiring about the one used by the native, or as that was several months ago, it would be very easy to get the details of the two incidents mixed. The native was one of a party camped across the river from us in June 1899, while a party of us were in the delta of the Kowak River, a tributary to Kotzebue Sound. The sound is an arm of the Arctic Ocean, just on the Arctic circle. I suppose the boy was not particular in cleaning his carbine and while out shooting fish along a little slough met with the accident. There was a doctor in our party and the boy was brought to him for treatment. I did not see the gun but the version

of the natives expressed mostly by signs was that the mechanism had given way allowing the powder blast to escape to the rear and the boy's face corroborated this. The worst injury was just below the point of the cheek bone and on back to the ear. The eye was almost out of line but had several grains of powder imbedded in it which were rather hard to remove. The left side of the face was not hurt much.

In the case of the .45-90 owned by my friend, it was not the lack of strength of the action, for the shell was discharged before the gun was fully closed. My friend, Jones, stepped out of the door of his cabin one night but returned in a hurry telling his partners there was a wolf close to the house. Taking his rifle he went outside trying, as he went, to throw a shell from the magazine into the chamber. Being excited he probably did not open the gun far enough, or something of the kind, and the gun jammed, and he tried to force it shut by a series of jerks. The first party who told me of it said "he kept jerking and snapping it," but I am rather doubtful about a man snapping a gun before it is closed. I am rather inclined to think a sharp corner of the breech block struck the primer several times. At any rate the gun went off, demolishing the mechanism and nearly scaring Jones into a fit. Then to cap the climax, the "wolf" came up close to the house and turned out to be a native dog, some of which look so much like wolves in color and form, and carry themselves in a way that makes it almost impossible to tell the difference.

In regard to my own experience with a gun partially opening on firing, perhaps I was worse scared than necessary, as several months afterward Lieut. Whelen related his own experience with a .30-30 that opened up at each shot until two minor parts were replaced with new ones when the gun worked all right again. I thought I had missed sudden death by a small margin. Perhaps the gun might not have misbehaved were it not for a punctured primer. The gun has a pretty strong stroke to the hammer and the firing pin seemed more pointed than necessary. I have fired large numbers of 32 Smith & Wesson cartridges in that gun using the Brayton Supplemental Chamber, and never saw a case yet where the pin in the Supplemental chamber was not driven clear through the primer, even when it was in poor working order from being carried in my pocket and becoming rusted from perspiration. Of course considerable of the force of the hammer is lost in this manner. The instance I mentioned is the only one when I ever saw a primer punctured in the .30-40 shell and do not care to repeat the experience. I did not feel any gas escape to the rear, but I know that it did. I can not say whether or no that was what forced the locking bolt down and let the gun open.

The Springfield, being provided with a gas port, will take care of any such mishaps itself and the shooter will not know of it until the gun is opened.



# THE "BALANCE" OF SHOTGUNS

THE qualities in a shotgun which are comprised in the single word "balance" are little understood and even lack definition. The present attempt to achieve precision may err from want of sufficient ground work of practical knowledge, but enough has been definitely established to ensure at least a substratum of truth in most of the theories and figures which will be advanced as the treatment of the subject progresses. The object of imparting definite balancing properties to the scatter gun is that the sportsman may quickly and accurately align it on any object, stationary or moving, which he may desire to shoot. Sluggish resistance to change of position on the part of the gun implies a misplacement of weight, in other words a faulty balance. The most elementary test of balance is to ascertain the position of the center of gravity of the gun by finding its point of balance on a fixed fulcrum. Though a good gun balances at the right place, so also may a bad one, as may easily be seen by a simple diagram. A suitable model for demonstrating problems of balance consists of a rigid bar, a fulcrum, and a series of movable weights. Here for instance is a view of the simplest conditions it is possible to conceive:

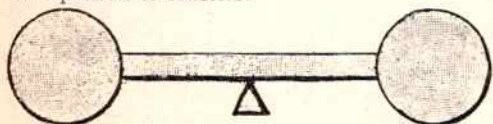


FIG. 1—CENTRAL BALANCE BY TWO EQUAL WEIGHTS AT AN EXTREME DISTANCE.

Unfortunately, such a test brings the enquirer very little nearer the problem he is desirous of solving, since the whole of the conditions expressed in the above diagram as equally reproduced in the one which next appears.

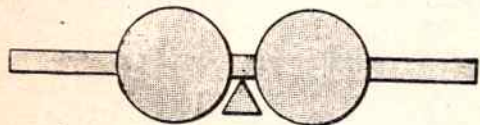


FIG. 2—CENTRAL BALANCE BY THE SAME TWO WEIGHTS BROUGHT CLOSE TOGETHER.

Treating the arrangement illustrated as a dumb bell of the kind used for athletic exercises it will be instantly obvious that for all movements in which the two ends of the bar are displaced in parallel and equal amounts there is no great difference between forms 1 and 2. The deal lift and the action of carrying from one place to another would not be greatly influenced by the distance of the weights from the balancing center. But the movement an exercise takes the form of rotating the bar, or in fact giving it any kind of movement where the two ends have unequal or opposite tendencies, the Fig. 1 arrangement would illustrate a maximum of inertia whilst the other would give the user far better control. For just the same reason that the weight of a fly-wheel is concentrated on the periphery, so for any given weight

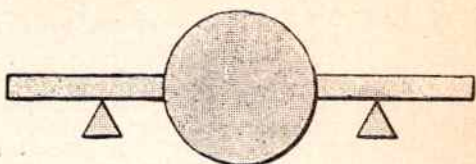


FIG. 3—THE SAME TOTAL WEIGHT CENTRALLY DISPOSED TO PROVIDE PERFECT "BALANCE"

the Fig. 1 arrangement produces a maximum of inertia, Fig. 2 intermediate and Fig. 3, which next appears, minimum resistance to relative motion.

The gun differs from any of the foregoing examples in the fact that the balancing center must not be disposed in the center of its length. Thus a gun may be said to balance more after the fashion shown in Fig. 4.

Against this last diagram it may quite fairly be objected that though a gun may be tested for balance by means of a single fulcrum it is in reality manipulated by the shooter's two hands, and therefore can only be judged by a system of test involving two points of support. This theory was fully developed by Dr. Mias in the columns of our esteemed



FIG. 4—GUN STYLE OF BALANCE WITH MOST OF WEIGHT NEAR CENTER.

contemporary, the London Field, some years ago, and he advocated a system of duplicate suspension from spring balances as follows:

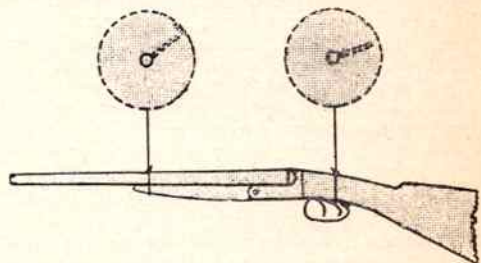


FIG. 5—MEASURING THE RELATIVE WEIGHT TAKEN BY THE TWO HANDS.

This attempt at a solution of a most difficult problem perfectly demonstrates certain points concerning the disposal of the metal and other parts of guns and rifles, but it draws no distinction between the conditions illustrated in diagrams 1 to 4. It would for instance be entirely incapable of showing a difference for an arrangement such as that shown overleaf. There can be little doubt that the doctor intended his test to carry the analysis of balance beyond what the ordinary fulcrum test could accomplish.



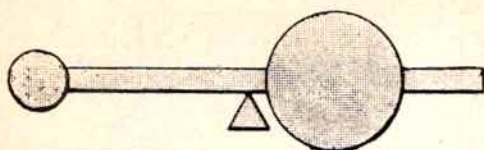


FIG. 6—CENTRAL BALANCE FROM UNEQUAL WEIGHTS HAVING THE SAME TOTAL VALUE OF THE SAME BALANCING CENTER AS IN THE PREVIOUS DIAGRAMS.

Dr. Mias' arrangement occupies the same position towards the one-fulcrum test of balance that a ready reckoner table does towards the ordinary process of arithmetic. It simply saves calculation. Knowing the balancing center of a gun, and having determined the distance from that center of the right and left hands respectively, it is a sum in simple proportion to decide how the total weight of the gun is divided between the two supports. The underlying rule is that the weight sustained at each place is in inverse proportions to their respective distances from the balancing center. Therefore, so far as regards the distribution of the weight of the gun between barrels, action and stock, and be it understood also its relative distribution within these details, the Mias test of two spring balances goes no further than the simple fulcrum test. Now, it was Major W. B. Wallace, P. A. C., the talented Chief Inspector of Small Arms, who defined with absolute precision, probably for the first time, the principle of testing balance in firearms. His definition of what constitutes perfect balance is open to criticism, but his treatment of the scientific problem is sound and merits the appreciation of all interested in the elucidation of gun problems. In the *Journal of the United Service Institution of India* of July, 1905, he referred to the necessity for keeping the length of the radius of gyration small, i. e., "the weight of the rifle should be concentrated as much as possible near the center of gravity." Here practically is the essence of gun balance in a nutshell. At any rate the means of examination and reduction to figure values are obviously to hand, so that theory and practice may be harmonized in order to produce a code of sound general principles. What then is the "radius of gyration?" It is the distance from the balancing center of the whole gun to the center of gravity of its dismembered halves.

It would be an expensive process to put the saw through every rifle or weapon whose balancing properties it was desired to measure. The result would nevertheless be extremely interesting if carried out with reference to all the military rifles. The point of severance would obviously be the balancing center, and the whole of the information referring to balance would be derived from the weight of the respective halves, and the location of their respective centers of gravity with reference to the point of severance. The distribution of weight, which is apparent to the eye in the simplest forms chosen for illustration in the various diagrams accompanying this article, could be equally emphasized in all classes of firearms if the proposed test could be applied. Differences of form and material would be duly taken into account, cavities would tell their tale, and the distance of

every part from the index center would be harmonized in one vast sum of arithmetic, of which the answer only was shown. The shotgun lends itself naturally to the proposed treatment, but unfortunately without involving its destruction. Theoretically, what is wanted is shown below; but a very near and even more useful approximation is possible without the need to do any damage.

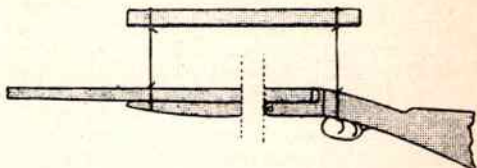


FIG. 7—TRUE BALANCE IN THE DISTRIBUTION OF WEIGHT IN THE DISMEMBERED HALVES.

In the case of take-down guns the test for balance can be applied to the barrels and stock and action. Here, then, is the means of reducing the most evasive of the properties of the shotgun to a system of scientific measurement. Records of good models can be collected and classified, so that theory may ultimately fix a type arrived at in the first instance by the skill of the practiced worker. The prime essentials of measurement are at the start extremely interesting, and it is doubtful whether they will ever need to be carried to the abstruse stage. There will, no doubt, be quantities of figures to arrange and interpret, but they will all run on the same simple basis. Briefly, and speaking only with reference to the limited number of examples which have been examined, good balance consists in the stock and action weighing some ounces more than the barrels, also in the barrels balancing at a point inside 10 inches from the face. The balancing point of the stock and action is doubtless of considerable importance, and the wood might be balanced and weighed independently of the action if it is desired to get satisfactory results.

From what has been said on the theoretical aspect of balance it will be obvious that the whole difference between sound and unsound ideas on the subject is the difference between the "live" balance and the "dead" balance of a gun. A weapon should feel alive when handled, and to do so it should respond to the directing movement of the arms with the sympathy of the acrobat rather than impose the inert resistance of an obstinate child. On the dead weight system of testing a gun as a whole, barrels heavy forward may be corrected by weighting the butt of the stock. But the resulting increase of Major Wallace's radius of gyration becomes apparent the moment the balancing test is applied to the component parts. A proper understanding of the principles of balance will emphasize the futility of endeavoring to impart handling properties to a gun wrongly conceived in the first instance. Balance begins and very nearly ends, with the fashioning of the tubes and their assembly in double-barrel form; but the action, and even the choice of a suitable density of wood for the stock are to be found amongst the ramifications of the unwritten science of balance.



# COLORED SHOOTING GLASSES

By CHAS. NEWTON

**N**EARLY every work on rifle shooting contains a brief reference to certain advantages to be gained at times by the use of colored glasses or spectacles. These references all read very much alike. As a fair sample of the manner in which the subject is usually treated, I will quote from Dr. Hudson's work "Modern Rifle Shooting from the American Standpoint," as follows:

"Another helpful point in some conditions of the atmosphere is to have a glass of a light amber color to interpose between the rear sight and the eye . . . . There are times when, from various causes, the light is very trying to the eyes, and when the use of such a colored glass is a great aid." This is all. Nothing is said about why or how the advantage in thus intercepting the light is gained and the impression is given that these glasses are useful only when the light is so strong as to be disagreeable to the eye. The other writers are no more specific, they usually contenting themselves with the statement that the use of a yellow glass will at times give a better definition of the sights, and then drop the subject.

Sometimes a Philistine from Missouri arises and asks "Why, since the use of colored glass cuts down the light, can such cutting down assist the vision?" and since the writer's experience has been such as to convince him that good results may be obtained through the use of yellow glasses in even moderately bright weather he endeavors to answer the question of the aforesaid Philistine.

To answer this question intelligently we must turn back to the physics of our school days and again consider the subject of light.

Without discussing the vibration theory of light we will turn at once to our old friend, the solar spectrum. Throwing solar light through a prism, thus separating it into its component elements, we find it composed, to adopt the nomenclature of long ago, of seven colors, violet, indigo, blue, green, yellow, orange and red, these colors being arranged in the order named and blending into each other where they adjoin in the spectrum.

When we speak of a glass as being of a certain color we mean merely that its composition is such that it transmits only one of the colors of the spectrum and is opaque as to the others. Therefore a "blue" glass is one which transmits only the blue rays, all others being stopped in passage through the glass as though it were actually opaque. The same is true of green, red or yellow glass, the latter permitting only the yellow rays to pass through.

Light has different properties such as heat, luminosity, and a chemical, sometimes termed "actinic" effect, and we will so term it.

These different properties are found to preponderate in different rays of the spectrum, the heat being found largely in the red rays, the luminosity mostly in the yellow rays and the actinic or chemical properties principally in the blue, indigo and violet rays, which are consequently sometimes termed the actinic rays.

In solar light all these rays are bound together in such proportions that they exactly neutralize each other and the result is an absolutely colorless, or white, light, which, however, possesses all the different qualities of its component rays, that is heat, luminosity and actinism.

It is the actinic rays which affect the photographer's plate, decomposing the chemicals in the film and rendering possible photography. There are also other rays of light in the spectrum, which come beyond the border of the violet rays and which are invisible to the human eye, but which are strongly actinic, and are termed "ultra violet" rays, and it is possible, by throwing the light through a prism and then shutting out the visible spectrum with an opaque shutter but admitting these ultra violet rays to actually photograph objects in what seems to the eye to be total darkness, the actinic properties of the ultra violet rays affecting the plate the same as ordinary sunlight.

So in ordinary light there exists not only the rays constituting the visible spectrum, with their characteristic properties but these ultra violet rays with their actinic effect.

Turning now to the human eye we find it to be merely a camera, having its shutters, its lens, its diaphragm and its sensitive plate, or retina.

With the camera, we stop down the lens opening with the diaphragm in a strong light or open the diaphragm when the light is weak, so in the eye the opening in the iris, which is the diaphragm of the eye, becomes smaller in a strong light, thus admitting less light, and larger in a weak light, thus admitting more.

Like the camera the diaphragm of the eye has limits both of contraction and of expansion, beyond which it cannot go, otherwise we could gaze at the sun at noonday, the aperture would be so small, and, on the other hand, in comparative darkness the iris would open until it would permit enough light to enter through the enlarged opening to enable us to see as well as the owl or other nocturnal birds or animals.

Unlike the camera, however, the diaphragm of the eye is apparently self acting, the adjustment being both involuntary and unconscious, but it is not actually so, as the amount of light admitted and thus thrown upon the retina controls the muscles governing the iris and, as the retina is intended to receive only a certain amount of light, any greater amount will injure it through over exposure as we find if we gaze directly at the sun on a bright day. The surplus of light irritates the retina, the irritation acts upon the nerves and muscles controlling the iris causing it to close to such an extent that but the proper amount of light is admitted, if its smallest aperture is sufficiently small to accomplish this; if not we must voluntarily protect the eyes from the light or the retina and consequently the eyesight will be injured or destroyed through over exposure.

The element in the light which produces this irritation of the retina is the actinic property,



coming on the actinic rays and consequently if we can screen out and exclude those rays to any extent, we avoid the irritation caused by them to the same extent, consequently avoid closing the iris of the eye or in other words stopping down the lens as much as though the light admitted possessed its actinic properties in full. Therefore the eye will admit more light, if the actinic rays be removed, than of the natural sunlight; and the stronger the light may be, without irritating the eye, the stronger and clearer will the vision be. And, since the action of the iris is controlled, primarily, by the amount of irritation of the retina by the actinism of the light, if we exclude the actinism we avoid the irritation to the same extent.

But the problem is to remove the actinic rays without diminishing the luminosity of the light.

As stated above, luminosity is but one of the elements of light, and this element is found most largely in the yellow rays. Any light which burns with a blue flame gives very little illumination as we see if we attempt to go into a dark cellar by the light of an alcohol cigar lighter or attempt to use natural gas under normal pressure with a proper admixture of air in an illuminating gas jet. The blue flame can be seen, and is, in fact intensely hot, but is of very little use in assisting us to see anything else; but if any foreign substance is burned with it, producing a yellow flame, it immediately becomes luminous, and if, as in the case of the Welsbach lamp, the heat of the blue flame be utilized to heat the mantle until it is white hot, it becomes strongly luminous but it is the incandescent mantle, not the flame which gives off the light. Likewise illuminating gas, which burns with a yellow flame is intensely luminous of itself.

Therefore, since the luminous property of light is largely in the yellow rays, and a yellow glass is merely a glass which will transmit the yellow rays freely but is more or less impenetrable to the actinic rays, if light is passed through yellow glass it will lose most of its actinic properties but will retain its luminosity practically undiminished as is demonstrated by the use of the ray filter in photography.

When one wears the yellow glasses, therefore, the actinic, and consequently the irritating, rays are mostly screened out, and the action of the nerves of the retina upon the muscles controlling the iris is the same as though in a very dim natural light, the opening of the iris under the protection of the yellow glass screen expands to its largest size and consequently admits the maximum amount of light, and since this light, although deprived of most of its actinic rays yet has its luminosity practically undiminished, the result is that a far greater amount of the luminous element of the light is admitted to the retina of the eye and consequently the vision is far stronger and clearer than it could possibly be with natural light.

The eye differs from the camera in that every part, being animal tissue, is plastic and capable of having its shape altered by the conditions to which it is subjected. With the camera, the only adjustments or alterations possible are in the size of the diaphragm opening and the distance between the lens and the plate, and these alterations are positive and permanent until the operator makes another change.

With the eye, as seen above, the irritation due to the presence of the actinic rays causes a muscular action in the eyeball in a strong light reducing the size of the iris opening to escape from the torture of the light until the opening is at its smallest point, beyond which it cannot aid in protecting the retina. As a result of this nervous and muscular effort the entire eyeball is in a nervous quiver and the result is just what would be obtained in taking a picture with a camera in motion, imperfect definition and a "dazzling" image.

And so our literary riflemen say the use of yellow glasses improves the definition of the sights. And it does. The only criticism intended to be made upon the manner in which this subject is usually treated is that it is not fully explained and sufficiently emphasized, as in case riflemen as a class were fully aware of the advantages to be gained in this manner, not only in very strong light but in any light sufficiently strong to prevent the iris opening to its largest size, the use of the colored glasses would be far more common and both the comfort and the accuracy of the shooting greatly increased.

In selecting the glasses care should be used to avoid getting them too dark, as such glasses cut down the yellow rays as well as the blue. As stated by Dr. Hudson, a light amber answers every purpose and offers very little obstruction to the passage of the luminous element of the light, and a reasonably light yellow will do. Dark colored glasses will shade and thus protect the eye but they at the same time cut down the luminous element of the light thus impeding the vision instead of assisting it, while the yellow glass gives far clearer vision than the naked eye.

If the eye be normal the spectacles should be made of plane glass, but if lenses are ordinarily used they may be made of the yellow glass but of the same strength as the regular lens.

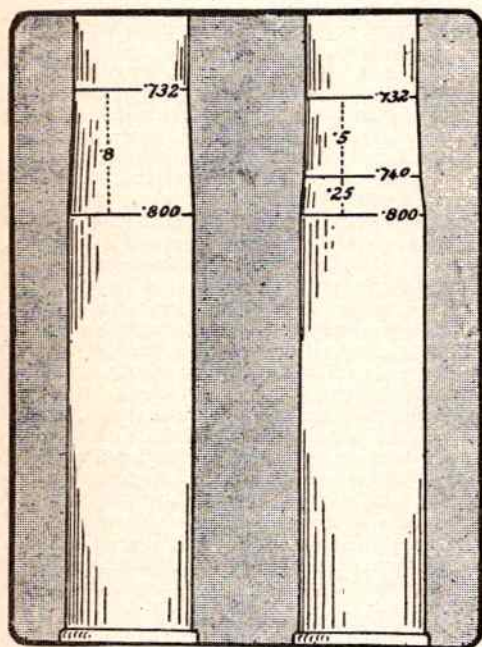
In mounting the glasses they should be set in strong metal rims, not in the now prevalent "rimless" style, not only on account of the greater durability of this style of mounting but for the further reason that when light strikes the edge of the rimless lens, or plane as the case may be, this edge acts as a prism and at times deflects fugitive rays of light into the eye, thus interfering with a uniformly clear vision. With the glass mounted in a metal frame, the metal covers the edges and this cannot occur.

The writer has purposely refrained from going deeply into the question of the nature and composition of light, the vibration theory of the Hertzian waves, which assumes that the different rays of light are merely either vibrating in waves of different lengths, the shortest wave lengths being the ultra violet and growing steadily longer as we go down the spectrum to the longest, the ultra red; the wave lengths of the shorter waves producing actinic effects, those of greater length producing luminosity and those still longer being characterized by heat, and all the mass of information, speculation and theory which this involves, and has endeavored to deal only with those simple and well known facts and principles which are essential to an intelligent comprehension of "the reason why" we can see far better through yellow glass than with the naked eye.



## CONES FOR GUN CHAMBERS

WITH the excellent object of diminishing the tendency to balling of shot, the shortest possible cone has always been recommended by the leading gun makers. The cone is the taper which reduces the external diameter of the cartridge tube to the internal. The lead is a second taper which aims at smoothing the entry of the charge into the barrel. To ensure gastightness it has been suggested that the cone should be kept inside the quarter of an inch long, and that the lead should taper from .740 down to the barrel diameter, whatever it may be. These figures refer only to 12-bores, but proportionate treatment can



be readily applied to the other sizes. It has happened, not once but many times, that guns bored with one long taper from chamber to barrel give the most excellent results. The excellence is not confined to any one maker's productions, but to guns coming from many factories. On the other hand, a considerable amount of trouble has been found with guns having the orthodox short cone, no matter how delicately the sharp edge may be smoothed down in the form of a lead. Balling is not a common fault with long coned guns, perhaps it occurs a little more frequently when the cone is over-long than when it is short, but experience with many makes of guns suggests that if there is a

connection it is very remote. Balling of pellets can generally be placed with certainty to the existence of excessive chamber pressure, but that its occurrence is assisted or retarded by certain forms of joining the chamber to the bore is little more than guess work. It may, therefore, be that the ideal of a short cone is based upon fallacious reasoning. At any rate practical experience is so often contrary that it becomes necessary to withdraw the strong support that has hitherto been accorded to the short cone plus a lead based upon wad diameter.

The accompanying illustration shows the two forms of cone under discussion. That on the left has been carefully taken from a sulphur cast of a very common gun, which, when tested for pattern, gave most exemplary behavior. There was no sign of balling, and the patterns obtained showed a degree of uniformity between round and round and evenness of distribution which made the characteristics of the gun's boring of more than passing interest. This is how the two barrels measured with the Allport gauge:

|                 |       |        |        |        |        |
|-----------------|-------|--------|--------|--------|--------|
| At.....         | 6 in. | 12 in. | 18 in. | 24 in. | 30 in. |
| Right barrel... | .725  | .724   | .723   | .720   | .696   |
| Left barrel...  | .736  | .732   | .732   | .730   | .694   |

The right barrel patterns were a little less than full choke, which can be accounted for by the fact that, though the muzzle diameter is right the general gauge is 10 points on the tight side, so diminishing the contrast. The left barrel is the correct size for a 12-bore and gave true full choke results. The gentle taper from breech to muzzle was no doubt accidental and due to careless manufacture, but it is a feature which many excellent shooting guns possess. Possibly by progressive pinching the shot in its passage down the barrel, the pellets are prevented from adhering together. The taper becomes very pronounced for the last few inches behind the choke. These things suggest that possibly there is no merit in a parallel bore. Certainly the thickening of metal near the choke will assist in strengthening the walls of the barrel at a point where ring bulges are apt to occur. Quality of pattern seems unaffected by diameter of bore. One of the finest shooting pigeon guns which has recently been tried has a diameter of over rather than under .740 inch, and the caliber tightened in both barrels the same .001 per six inches of length. Another gun giving excellent results gauged .738 inch, and the bore did not begin to taper towards the choke till a point 24 inches from the breech. The barrel was only 28 inches long, so that this gun would be regarded as having a parallel bore. The short cone has been tried in many directions, but has certainly not shown itself a noticeable means of improving results. Possibly the long cone in combination with a slightly taper bore introduces a more favorable state of affairs. Looking at the drawing, quite as sound arguments could be advanced in favor



of the long cone as the alternative double taper arrangement. It is more than probable that the charge of shot by pressing against the fully expanded cartridge tube has a diameter materially in excess of the .740 of the card wadding. If so the junction of the two cones presents an obstruc-

tion to the passage of the charge which does not exist in the alternative arrangement. If present ideas are in the nature rather of theories than demonstrated certainties, they must be abandoned when sufficient proof is accumulated against them.

## THE GAME GUN FOR A GOOD SHOT

THE arguments in favor of half-choke boring, from the point of view of the first-class game shot, are reviewed in this article. In stating the case for rather closer boring than is usually advocated it is possible that the arguments in favor may be slightly over-emphasized; but even so, cylinder boring has many advocates, who will take care that their favorite boring is not unduly crabbed.

The need to inquire more closely than has previously been attempted into the merits of the half-choke barrel has been emphasized by the undoubted success of many shooters whose guns proved upon examination to be bored for much closer shooting than ordinarily obtains. Conditions of sport are constantly changing, and the shooter is increasing his standard of skill as a result of better gun fitting and more careful tuition at the shooting school. As the principles of swing and allowance come to be better understood, shooters find themselves successfully taking shots which a generation ago would have been voted too far away, by all but the select few who had fully mastered the amount of forward allowance for a fast-crossing bird at a full range.

The clay bird, when thrown under the conditions of the shooting school, as distinguished from those which obtain at the clay bird club, exercise a most valuable educational influence. The particular kind of shot which occurs too seldom in the season ever to become properly understood can be repeatedly thrown until its mysteries are solved. The same process applied throughout the whole range of conditions which are liable to occur in sport raises the average of shooting, and thereby encourages a man to attempt shots which would previously have been allowed to go by. A really finely accomplished long-distance shot gives more lasting satisfaction than a short, easy shot, however well taken. Each style of boring has its best distance, and the more accomplished marksman will increase his enjoyment by using a gun which gives him five yards more range than his neighbor. Granting the facility to do justice to the lengthened range of his gun, new opportunities are added, without necessarily diminishing in like proportion the short-range successes. The skill which triumphs over the fast crossing shot at 40 yards, will be equally effective in directing the charge at the head of a driven bird so as to chop it down without striking the body with the thickest cluster of pellets. The same thing can be accomplished with ground

game. It is, for instance, far better to see that half a dozen pellets have been through each ear of a hare, leaving the body intact, than the alternative of both hind legs broken. The shot held well forward is more deadly and more satisfactory in every way.

On the general subject of patterns it is extremely difficult to lay down any hard and fast rules, and yet the very close examination which was applied to the spread of shot in relation to the sizes of game birds when discussing the merits of small-bore guns, resulted in showing that five is the minimum number of pellets which should strike, say a partridge to ensure cleanly killing it and bringing it promptly to bag. The density of pattern which will accomplish this desideratum cannot with No. 6 size and improved cylinder boring be obtained at a further distance than 30 yards. With light charges and a larger size of shot the distance is further curtailed, and then it is that the shooter complains of bad penetration, all the while that it is pattern which is deficient. The full-choke gun gives a good killing pattern at 40 yards, probably even further; but for shots taken at such a distance No. 6 size is unduly small for ordinary game birds, and No. 5 with its reduced number of pellets in the charge, is distributed none too closely. At any rate, the maximum range of a fully choked gun using No. 5 shot is not likely to exceed 45 yards if a satisfactory proportion of clean kills is desired. On the other hand, practical experience is quite emphatic in teaching us that full-choke boring involves far too great a cost of efficiency at short ranges to be worthy of general adoption.

The cylinder and improved cylinder are at their best in the region of 25 or 30 yards, and there are many shooters, not of the highest rank, who would be deprived of their only chance of contributing to the bag if they were forced to abandon the boring which undoubtedly best suits the easy chances. The easiest of all birds is the pheasant flying a true course just clear of the tree-tops over the shooter's head. The first barrel, delivered at an angle of about 45°, is fired when the bird is a nice 25 or 30 yards distance. Its angular velocity is such as not to require very active manipulation of the gun; further, the distance is short enough for a quite moderate forward lead to suffice, and, given a maximum spread to cover errors of aim, a fair proportion of such shots can be secured by the



medium grade of shot. The same kind of argument applies with equal force to the shooting of rabbits.

The half choke is a medium style of boring between the two extremes, which at 40 yards gives most perfect distribution of pellets, wholly filling the 30-inch circle and some inches surrounding it. Practically all the pellets are fully effective at this range, the area of unduly thin places being extremely small. With a cylinder gun, on the other hand, the 30-inch circle is at the best but inadequately filled, while the outlying portions thin off so as to produce a maximum of wounding area. The full choke at 40 yards shows a less satisfactory style of pattern than the half choke, because, though the former gives 70 per cent of the pellets in the 30-inch circle, this very high proportion can only be achieved by a very decided bunching in the center of the area. With the half choke, on the other hand, the variation between the center and the margins of the circle is not apparent; therefore, on the basis of the 40 yards test, and bearing in mind the rule that each bird requires five pellets at least to bring it safely to bag, the half-choke gun, giving 60 per cent of the pellets in the 30-inch circle at 40 yards, represents at this distance practically perfect conditions of spread. At 35 yards the behavior is that of a full choke at 40 yards, while at 30 yards practically the whole of the charge in contained in the 30-inch circle. Inside the last-named distance the shooter must be prepared to hold well forward so as to shoot his birds rather with the margin than with the center of his pattern.

With the idea of fully testing the efficiency of the half choke as a game gun a weapon has been procured which, after some slight alteration, exactly complies with the desired specification. The gun in question is intended to carry out another principle, viz., absolute similarity between the two barrels. If a man so far fancies his shooting as to feel confidence in taking all chances that present themselves between 30 and 40 yards—and half choke boring seems best suited to these distances—then it seems only proper that the right barrel should have the same killing powers as the left. The assumption that the right barrel should be the more open shooting of the two is based on many years' experience. Such an argument need not, however, stand in the way of an attempt to arrive at a specification of gun for a shooter willing to back himself as above the average. In advocating the merits of half-choke boring it has been frankly admitted that the shooter will need to study its behavior in regard to shots taken at the shorter distances; consequently if both barrels are absolutely similar he is not bothered to keep in mind which he is using at the moment. Past experience tells him that his gun has a best distance, and his constant endeavor is to take the bulk of his shots within predetermined limits. Success implies a large proportion of clean kills at some 5 to 10 yards longer range on the average than his friends with cylinder guns are able to negotiate. As a test of the possibility of getting a pair of barrels to shoot absolutely alike, the following results are extremely interesting.

Table I.—Pellets in 30-inch circle at 40 yards from the right and left barrels respectively of a half-choke gun similarly bored in both barrels. Charge,  $1\frac{1}{8}$ -ounce of No. 6 shot (289 pellets).

| RIGHT BARREL          |                          | Position of Circle |                |
|-----------------------|--------------------------|--------------------|----------------|
|                       | Pellets in 30-in. Circle | Elevation          | Laterally      |
|                       |                          | 6-in. low          | 2-in. left     |
| 42 grains powder..... | 173                      | 6-in. low          | 3-in. left     |
| 42 grains powder..... | 177                      | 5-in. low          | 4-in. right    |
| 42 grains powder..... | 157                      | 4-in. low          | 5-in. left     |
| 42 grains powder..... | 158                      | 7-in. low          | 1-in. left     |
| Average.....          | 161                      |                    |                |
| 33 grains powder..... | 176                      | 4 in. low          | true           |
| 33 grains powder..... | 207                      | true               | true           |
| 33 grains powder..... | 195                      | true               | 1-in. left     |
| 33 grains powder..... | 180                      | 3-in. low          | 2-in. right    |
| 33 grains powder..... | 170                      | 5-in. low          | 2-in. left.    |
| Average.....          | 186                      |                    |                |
| Average 10 shots..... | 173=60%                  | 3.8-in. low        | 0.8-in. left   |
| LEFT BARREL           |                          | Position of Circle |                |
|                       | Pellets in 30-in. Circle | Elevation          | Laterally      |
|                       |                          | 6-in. low          | 1-in. right    |
| 42 grains powder..... | 169                      | 7-in. low          | true           |
| 42 grains powder..... | 199                      | 6-in. low          | true           |
| 42 grains powder..... | 145                      | 6-in. low          | true           |
| 42 grains powder..... | 150                      | 6-in. low          | 1-in. right    |
| 42 grains powder..... | 191                      | 6-in. low          | 1-in. right    |
| Average.....          | 171                      |                    |                |
| 33 grains powder..... | 201                      | 5-in. low          | 5-in. right    |
| 33 grains powder..... | 165                      | 12-in. low         | 2-in. right    |
| 33 grains powder..... | 197                      | 6-in. low          | 3-in. right    |
| 33 grains powder..... | 198                      | 11-in. low         | 2-in. right    |
| 33 grains powder..... | 137                      | 15-in. low         | 8-in. right    |
| Average.....          | 180                      |                    |                |
| Average 10 shots..... | 175=61%                  | 7.9-in. low        | 2.2-in. right. |

Considering that half-choke boring implies 60 per cent of the pellets in the circle, it is truly remarkable that this result should have been absolutely accomplished with the right barrel, and only 1 per cent out with the left. The results are first of all remarkable for a complete absence of cartwheel patterns. Next it will be noticed that the lowest number of pellets in the circle is 138, which represents an improved cylinder pattern. The third striking point is similar regularity in the opposite direction, which is exemplified by only one round in each series passing the limit of 200 pellets. The patterns as a whole were extremely pleasing to the eye, completely filling the circle with well distributed pellets, with a very small proportion of the total number uselessly scattered around the boundary. The diameter of killing circle gave, roughly, a 5-inch ring outside the 30-inch circle, making a total diameter of 40 inches. A similar set of tests was conducted with No. 5 shot, the number of pellets in the charge being thereby reduced from 289 to 232. The number of pellets in the circle should be reduced in the same proportion, viz., from 173 to 139. By one of those variations which constantly occur in shooting experiments, the larger size shot failed to behave in a proportional manner, but better, as is shown by the results which are now given:

Table II.—A repetition of the same experiment, using  $1\frac{1}{8}$ -ounce of No. 5 shot (232 pellets):

| RIGHT BARREL          |                          | Position of Circle |            |
|-----------------------|--------------------------|--------------------|------------|
|                       | Pellets in 30-in. Circle | Elevation          | Laterally  |
|                       |                          | 4-in. low          | 8-in. left |
| 42 grains powder..... | 143                      | Cartwheel pattern. |            |
| 42 grains powder..... | 158                      | 4-in. low          | 3-in. left |
| 42 grains powder..... | 141                      | 5-in. low          | 1-in. left |
| 42 grains powder..... | 158                      | 5-in. low          | 4-in. left |
| Average.....          | 150                      |                    |            |



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|                       |     |             |            |
|-----------------------|-----|-------------|------------|
| 33 grains powder..... | 134 | true        | 5-in. left |
| 33 grains powder..... | 164 | 4-in. low   | 8-in. left |
| 33 grains powder..... | 163 | 1-in. low   | true       |
| 33 grains powder..... | 170 | true        | 6-in. left |
| 33 grains powder..... | 150 | 1-in. low } | true       |

Average.....156

Average 10 shots.....153=66% 2.7-in. low 3.9-in. left

## LEFT BARREL

|                       |     |            |             |
|-----------------------|-----|------------|-------------|
| 42 grains powder..... | 150 | 5-in. low  | 1-in. right |
| 42 grains powder..... | 157 | 6-in. low  | 3-in. left  |
| 42 grains powder..... | 163 | 6-in. low  | 1-in. right |
| 42 grains powder..... | 164 | 13-in. low | 1-in. right |
| 42 grains powder..... | 173 | 4-in. low  | 4-in. right |

Average.....161

|                       |     |           |             |
|-----------------------|-----|-----------|-------------|
| 33 grains powder..... | 159 | 4-in. low | 1-in. right |
| 33 grains powder..... | 166 | 6-in. low | 3-in. left  |
| 33 grains powder..... | 153 | 6-in. low | 3-in. left  |
| 33 grains powder..... | 141 | 8-in. low | 1-in. left  |
| 33 grains powder..... | 175 | 8-in. low | 4-in. left  |

Average.....159

Average 10 shots.....160=69% 6.6-in. low 0.6-in. left

Here it will be noticed that one cartwheel pattern was experienced in twenty rounds, thus making an aggregate of one in forty, which is three less than the accepted allowance. The rise of percentage, which is hostile to recognized average behavior, must be dismissed as a mere freak covered by the law of chances notwithstanding the apparent consistency of the results. Accidental differences of manipulation in loading the cartridges may possibly have favored an increased proportion of high shots, or it may equally have diminished the low shots; but, whichever way that may be, Table I illustrates the behavior which conforms with the boring of the barrels. Taking a single survey of the two lots of results, the pair of barrels have certainly behaved with extreme consistency, notwithstanding the use of two kinds of powder in each ten-shot series. The figures relating to the position of the circle in relation to the point aimed at have been added for general information, but not with the idea of drawing special deductions.

To carry the tests a stage further a fresh set of cartridges were loaded with 42 grains of powder and the same  $1\frac{1}{8}$ -ounce of No. 6 shot as was used in the Table I experiments. With the idea of testing the nature of the pattern produced at 30 and 35 yards, the number of pellets was counted in the usual 30-inch circle. The right and left barrel having been shown by the previous results to be strictly similar in behavior, the shots in each

series were fired half from one and half from the other. The results obtained were as follows:

Table III.—Pellets in 30-inch circle at 30 and 35 yards, respectively; charge, 42 grains and  $1\frac{1}{8}$  ounce No. 6 shot (289 pellets):

| 35 Yards             |         | 30 Yards                   |         |
|----------------------|---------|----------------------------|---------|
| Right barrel.....216 | Av. 215 | Right barrel.....240       | Av. 242 |
| Right barrel.....221 |         | Right barrel.....242       |         |
| Right barrel.....208 |         | Right barrel c/wheel...247 |         |
| Right barrel.....221 |         | Right barrel.....238       |         |
| Right barrel.....211 |         | Right barrel.....233       |         |
| Left barrel.....196  | Av. 208 | Left barrel.....243        | Av. 250 |
| Left barrel.....184  |         | Left barrel.....253        |         |
| Left barrel.....223  |         | Left barrel.....250        |         |
| Left barrel.....221  |         | Left barrel.....256        |         |
| Left barrel.....246  |         | Left barrel.....249        |         |
| Average.....73%      |         | Average.....246=85%        |         |

The average pattern at 35 yards of 212 represents 73 per cent, which is practically equivalent to the shooting of a full-choke barrel at 40 yards. The results are obviously extremely regular, the variations being proportionately less than in the previous results. At 30 yards one cartwheel pattern was experienced, making a total of two in the sixty rounds fired. It may be interesting to mention that, although the characteristic formation was present, the hollow space was not in the strict center, since a circle drawn around the point of aim was found to inclose 155 pellets, not in itself a bad pattern. In so far that 85 per cent of the total charge was contained in the 30-inch circle at 30 yards, the odd pellets outside may be entirely disregarded so far as killing value is concerned. They doubtless mainly consisted of the bruised and battered pellets of the charge, which leave the main body at an early stage of the flight. The 30-inch circle was certainly thoroughly well filled with pellets right up to the margin, while those just outside the edge justified the accepted value of 32-inch for a half-choke gun at 30 yards.

Though much has been said, there is still the feeling that many arguments in favor of half-choke boring for both barrels have been omitted. Certainly all the changes which are in progress seem to work in the same direction. Just as the cylinder gave way to improved cylinder, and the definition of improved cylinder was raised from 47 to 50 per cent, so now it seems as though the general improvement of skill in shooting combines with the use of lighter charges and larger shot to demand for the practiced performer the raising of the right barrel pattern to the level which has hitherto been regarded as appropriate only for the left.—*The London Field.*

## ANSWERS TO CORRESPONDENTS

## THE .30-40 CARBINE

EDITOR GUN DEPARTMENT: About two months ago I wrote you for advice on "What caliber gun would suit for bear hunting?" so I now have a .30-40 carbine, 1895 pattern, and being unacquainted with the arm, have a few more questions to ask.

1. What is the point blank range of this gun?

2. Will it shoot the .303 British cartridge?
3. Is it possible to take out the magazine for cleaning purposes?
4. Is there any special cavalry boot for this gun? Will the ordinary carbine boot do?
5. How can I fix on a gun sling?
6. Is the mechanism of this gun likely to get out of order under rough handling? I notice that it is rather complex.



7. How would the following sights suit for hunting: Bead, Leaf, and Peep Rear?

Thanking you for your advice in selecting a hunting arm I remain. Yours cordially,  
"SKIPPER."

[Your choice of a hunting arm could scarcely be improved upon. The arm which you have chosen is one which I have used for many years and is my choice of all the lever action arms. The term "point blank" is not an arbitrary one being merely descriptive. It is a convenient expression to indicate that point where the trajectory of the bullet rises above the line of sight.

There is actually no point blank for any arm except as it is determined by the position of the sights, and method of aiming. When using the .30-40 carbine for hunting I sighted it point blank for 100 yards. That is, it would shoot to center at 100 yards and keep the bullets on a vertical line one and one-fourth inches long up to that distance. When sighted point blank for 200 yards, it will, if properly held, keep the bullets on a vertical line five and one-half inches long. The arm will of course shoot groups much smaller than five and one-half inches. My figures merely refer to the influence of gravity on the bullet while traveling between the muzzle and the target. It was my custom to sight my carbine to shoot to center, or point blank at 100 yards. This is the average distance at which bear and deer are shot; then if game is encountered at a longer distance allowance can be made by holding higher. The tendency is always to shoot over rather than under.

The .30-40 will not handle the .303 British. The magazine can be dismounted, of course, but it is neither advisable or necessary to do so, as it can be cleaned thoroughly by opening the action.

No special boot is necessary; any boot or scabbard will fit the model 1895 carbine. I carried mine during an 800 mile ride on horse back, through Arizona and Mexico, in a common boot such as can be purchased at any sporting goods store.

The Winchester people have for sale a regular sling with attachments. A wood screw for the stock, and a metal screw for the upper band or the metal tip of the fore-end. The sling is attached by swiveled steel hooks; the price complete is \$1.50.

The mechanism of the model 1895, while seemingly complex, is at once simple and durable, and has stood the test of service in every climate.

The combination of sights named by you is to be recommended. The Lyman rear folding leaf sight No. 6, is often convenient to use in failing light. My 1895 carbine was sighted with Lyman receiver sight and Sheard's gold bead front sight. My barrel was made without the rear sight notch.  
—R. A. K.]

### CARTRIDGE COMPARISONS

EDITOR GUN DEPARTMENT: For some time I have been a silent admirer of your most excellent Gun Department and now I would like to have you answer the following questions:

1. How long is the barrel of the Krag rifle?
2. I notice Mr. E. C. Crossman says "the .32 special is a fraud and a snare and it is not as power-

ful as the .32-40." Will you please tell me where I can secure .32-40 cartridges that are more powerful than .32 special?

3. If I am not mistaken the bore of the Winchester .30-30 is .305 and .30-30 bullets other than Winchester are .308. If so, wouldn't they give poor results when used together?

Respectfully,

W. B. COVINGTON.

[The barrel of the Krag rifle is 30 inches long. The barrel of the Krag carbine is 22 inches long. Both take the .30-40-220 cartridge listed as the ".30 U. S. Army."

The different makes of the .32 special and the .32-40 cartridges compare in strength as follows:

Winchester .32-40 high velocity. Weight of bullet 165 grains, velocity 1700 foot seconds, energy 1058.

Marlin .32-40 high power smokeless. Weight of bullet 165 grains, velocity 2000 foot seconds, energy 1464.

Savage .32-40 high power. Weight of bullet 165 grains; velocity 1962 foot seconds, energy 1276.

For the .32 special of different makers, velocity and energy are as follows:

Winchester, weight of bullet 170 grains, velocity 2050, energy 1585.

Marlin .32 special. Weight of bullet 165 grains, velocity 2000 foot seconds, energy 1464.

The twist of the rifling for the .32-40-165 is usually one turn in 16 inches and the barrels for all high power rifles should be made of smokeless steel. The bore of the Winchester .30 caliber rifles is standard .308, which is also the standard for the Marlin and Savage rifles. Individual rifles often vary slightly in the size of the bore. Bullets for high velocity arms should fit gas tight to give good results and prevent gas cutting.—R. A. K.]

### INFORMATION WANTED

EDITOR GUN DEPARTMENT: I wish to purchase the best 9 m. m. sporting rifle made in bolt action—one that will give best results in northern cold climates on big game.

Will some Brother please put me wise either through columns of the Outer's Book or letter?

Respectfully,

Waterloo, Iowa.

R. C. BODWELL, D.O.

### THE SCATTER GUN

EDITOR GUN DEPARTMENT: Will you kindly tell me the meaning of the compound calibers such as .30-30, .32-40, .38-55, etc? I know that the .22 means 22 one-hundredths and the .303 means 303 one-thousandths of an inch, but am not clear on the first mentioned.

Will scratch brushes of wire mar the polish in gun barrels, and if so, would that affect the shooting qualities? This applies to shot guns?

Will repeaters shoot better than double guns? The following queries will apply to shooting pheasant, quail, rabbits, etc.

Which length of barrel shoots better—26 or 30-inch? Please explain why.



Will Damascus barrels shoot more accurately than ordinary twist or plain steel ones? And are they stronger?

What gauge is best for the aforementioned game and what choke?

With ordinary use, say two weeks every fall, what would be the life of a 12 gauge gun if properly cared for?

Yours truly,

C. L. WALLACE.

[A few years ago before smokeless powder came into general use, it was customary to describe cartridges by naming the caliber first, then the number of grains of powder used and last in order, the weight of the bullet. Thus a .45-70-500 cartridge would be .45 caliber containing 40 grains of powder and 500 grains of lead. The figures .32-40-165 describes a cartridge of .32 caliber containing 40 grains of powder and a 165 grain bullet. The terms which we frequently hear: .30-30, 32-40, .38-55, are merely further shortenings of the original descriptive terms. Rifle barrels are measured decimally, and the diameter of the bore is described in hundredths of an inch, while shot guns are measured and described according to the number of round balls of lead that, fitting the bore, it would take to weigh a pound. Thus a 50 gauge, or half-inch bore, requires 50 round balls to the pound, a 16 gauge carries an ounce or 16 round balls to the pound.

Tempered steel scratch-brushes, if used habitually will surely destroy the fine finish on the inside of shot barrels, and eventually affect their shooting qualities. When the polished interior of a shot barrel is roughened with emery or a steel brush, it is more liable to foul, and will therefore require cleaning oftener. You will find soft brass wire gauze folded over a few thicknesses of cloth, on the end of a hickory wiping rod, effective and safe for cleaning the finest shot barrels.

It is a pretty generally accepted theory that more uniform accuracy is obtainable with single, than with double barrel guns, at varying distances. The reason for this is the difficulty of making the double barrels shoot to a common center at varying distances. It also is claimed that single barrel shot guns, including the repeater type, shoot with slightly greater force. These, of course, are hair-splitting differences. As to comparative results from different length of barrels, there is no perceptible difference between the .30 and .32 inch barrels. When, however, the latter are compared with the 26 and 28-inch barrels, the longer barrels will give better results. The reasons are a better pattern, better powder combustion and longer sighting plane, all of which make for a better general performance.

Damascus barrels, although more expensive, are in no way superior to the first class twist or steel barrels, either in strength or durability. A good steel barrel, such as is applied to first class American guns by our armors, is stronger and less susceptible to injury than the built-up Damascus or twist. There is comparatively little demand for Damascus or twist barrels among shooting experts. The 12 gauge is still the most popular gun in America, although there is a growing sentiment in favor of smaller bores more especially for use on the game which you have mentioned.

Many of the most artistic sportsmen in the country are using the .20 gauge with splendid results.

If you are limited to one gun, a .12 gauge is the best for general use. If it is a repeater, a full choke, if a double, the right barrel a modified choke, and the left barrel a full choke, will be most satisfactory for every branch of sport. Given proper care, no wearing or endurance limit could be named for a well made gun; with but two weeks' wear annually, with proper care, it would eventually become an heirloom of great antiquity. I know of several shot guns owned by expert trap-shots, that have been fired over one hundred thousand times and are still in commission.—R. A. K.]

### SHORT RIFLE BARRELS

EDITOR GUN DEPARTMENT: Would there be any loss in velocity in a Savage model 1903 .22 caliber rifle with a 30-inch barrel using .22 short smokeless and greaseless cartridges? Do the Maxim Silencers do all that is claimed for them in the way of eliminating noises? Do they diminish the accuracy? What percentage better will a barrel made for the .22 short only, shoot than one made for the three lengths?

Yours,

FRANK DAN EROW.

[I do not think there would be any falling off of velocity in the 30-inch Model 1903 Savage .22 caliber taking the smokeless and greaseless cartridges. Many of the expert .22 caliber riflemen use the 30-inch barrel in their match shooting. It is pretty generally understood that up to a certain limit the long barrel gives slightly better results.

Distance between the sights is an advantage in aiming and the inertia of a long barrel is an advantage in holding, where extremely close shooting is desired. The point at which friction of the bullet in the barrel counter-balances the pressure of the powder gases, would vary according to the fit of the bullet and the pitch of the rifling. All rifle manufacturers keep well within the limit of the powder performance in determining the length of their barrels.

Proportion, balance, and symmetry of outline, are important factors in determining the length of barrels in all standard models of first class armors. In regard to shooting .22 shorts in a barrel chambered for the .22 long rifle, there are many reasons why the performance of the .22 short would not be quite up to its standard of excellence as fired from a barrel chambered for the .22 short only.

The .22 short requires a slower twist of rifling. The standard being one turn in 20 inches for the Winchester, Colt, Remington and Marlin, while the .22 long rifle requires a 16 or 17-inch twist.

In shooting the .22 short from a barrel chambered for the three sizes, an accumulation of fouling will sometimes form ahead of the short shell and against the shoulder of the chamber. This sometimes becomes hard as enamel, and if not removed will cause erratic shooting. The trouble is more noticeable and more likely to occur while using black powder cartridges. In rifles that do not breach up closely this fouling at the shoulder of the chamber will sometimes cause an escape of gas to the rear. Owing to the variations in the pitch of different



makes of rifles and the ammunition used in them, it would be almost impossible to determine without exhaustive tests just what per cent better results the .22 short would give in a rifle chambered for that length only.

The Maxim silencer will certainly do all that is claimed for it in the way of eliminating noise. The United States Government has recently made some tests with the silencer at the school of musketry, Monterey. The tests, while not yet completed, show that about two-thirds of the noise of the explosion is eliminated and about 56 per cent of the recoil is counteracted; the accuracy of the rifle is not affected, in fact the scores made with the silencer were much better than those made without it. The improvement was attributed to the steadying effect of the slight additional weight at the muzzle of the rifle and the elimination of so large a proportion of the noise and recoil which had the effect of rendering the troops less liable to shrink while releasing the trigger.—R. A. K.]

### THE AUTOMATIC PISTOL

EDITOR GUN DEPARTMENT: I have been for many years devoted to the use of fire arms and used them whenever I had leisure to indulge in my fondness for shooting. Like many others I am interested in the revolver vs. the automatic "spiels" which appear in the Gun and Ammunition Department of the Outer's Book. In common with many other poor deluded unfortunates I believe that the Colt's single action .32-20 revolver, with a seven and one-half-inch barrel, is about the best on the market for all round use. I think it would be better if built lighter, and with a swing out cylinder, but I am willing to be convinced that the automatic is the "Great God Budd." If convenient will you kindly, in some future number of the Outer's Book, publish cuts, details, and description of dismounting and assembling the automatic pistol, which in your estimation would most nearly take the place of the afore mentioned Colt. Please give distance between sights, trigger pull, range and penetration, etc., not overlooking any of the superb points which so strongly characterized the now out of date arm which so many of us learned to love, honor and cherish, that "with all its faults we love still." Of course, we all know that the revolver is not fundamentally a correct principle, and leaks gas, is comparatively slow and difficult to reload, and is unnecessarily heavy for its caliber. From its principle it must always be a heavy and bulky weapon in certain calibers. When you can show us an automatic pistol that is superior to the present revolvers in the matter of accuracy for the ordinary bum pistol shot, like myself, not considering the trained experts who shoot all the time and could

get good results from a flint lock horse pistol, I believe that such a pistol will be generally adopted.  
Yours,  
JOHN W. ANDERSON.

[I would say for the information of Mr. Anderson and others interested that we have arranged with some of the very best writers to furnish interesting matter on the subject of automatic as well as other types of arms for future numbers of the Outer's Book.—R. A. K.]

### REMOVING BROKEN SHELLS

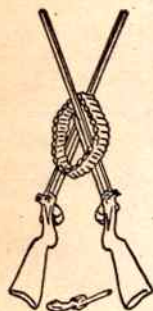
EDITOR GUN DEPARTMENT: About a year ago, I got an empty shell stuck in a Model 1890 Winchester repeater, of which I am the owner. As my shell extractor would not pull it out, I tried to ram it out, but instead, I punched the base off, leaving the copper cylinder fast in the chamber. I then took the rifle to a gunsmith, who cleared the chamber but in doing so enlarged it so that every cartridge fired, burst the shell. Is there some way by which I could have this trouble remedied? Yours,  
F. H. SWAN.

[From your description it is evident that the chamber of your rifle is destroyed. The only remedy now, is a new chamber. This can be accomplished by two methods, one is to cut off the damaged section of the barrel, rechamber, and cut a new thread and shoulder on the barrel. This method would necessitate shortening the magazine and its tube, all of which would be an expensive operation. Another method is to cut a thread in the damaged chamber, screw in a steel bushing, center carefully and rechamber. The latter method is preferable and less expensive. I have had two .22 caliber rifles treated in this manner, and by so doing, prolonged the life of each.

In case of future trouble of a similar nature, oil the chamber thoroughly, set the rifle aside for a few hours to permit the oil to work in between the shell and the walls of the chamber; then tap lightly with a brass rod having a square end the full diameter of the barrel. If the head is pulled off the shell, leaving the copper cylinder in the chamber, get a small tapering wood screw, of a size that will screw snugly into the stuck shell. The sharp edges of the screw will cut into the soft copper and the obstruction may be removed with the wiping rod, using short light movements of the rod to gradually loosen it. I have removed broken shells from a .22 rifle by inserting a round steel tool like a darning needle between the walls of the chamber and the broken shell when the head was missing, and gradually buckling the shell inward toward the center, after which, it is easily removed. With this method extreme care must be exercised to prevent marring the walls of the chamber.—R. A. K.]







# GUNS AND AMMUNITION

EDITED BY ROBERT A. KANE



This department is intended to be a place for the exchange and discussion of views on any subject pertaining to arms and ammunition, from which no one with an idea to advance shall be barred. The only conditions are that the opinion must not be manifestly absurd, that it be expressed in courteous language and that no personalities be indulged in. Each opinion is printed for what it is worth and its publication does not commit the editor to the view expressed. The widest range will be permitted and our readers are invited to make free use of these pages, but it is important to remember that *under no circumstances will personalities ever be permitted.*



THE ROSS .280 RIFLE, AS MADE FOR EUROPEAN TRADE

## THE NEW ROSS RIFLE

PART I

By EDWARD C. CROSSMAN

WE paid Uncle Sam's minions twenty large, silver, cartwheels, representing the duty on the rifle, and then joyfully lugged the long box homeward.

The way the rifle was packed was an indication of the careful attention to details that produced the gem we found inside. Removing about forty large screws that fastened the cover on the box, we found what appeared to be an unusually thin Egyptian mummy, resting in a frame made for it, with pieces of felt to prevent marring the corpse. The Ross Rifle Company evidently believe that the trip from Quebec to Los Angeles is one mostly by water and that freight is carried on the hurricane deck of a submarine at that. We unrolled some seventeen yards of greased burlap and then twice that length of still greasier paper. Inside was a long stick of cold cosmoline with an inside core of rifle that we got down to about two days later. If you have never tried disentangling a rifle from a cosmoline overcoat and lining, you cannot appreciate our

excavations. But after we got a fair look at the rifle we agreed that the packing was none too good for the beauty of a rifle on which it was used.

The rifle in question, with which some of the tests mentioned in this article were made, is a hybrid affair being one of the "Deer Stalker" Ross .280 bores as made for export to England for the highest class European trade, fitted with fine English stock of very heavy Italian walnut and fitted with the long 30½ inch barrel used on the target rifles. It is therefore a combination of a hunting and target rifle, being made up by the Ross Company on special order.

There may be handsomer rifles than this one, but I have failed to find them as yet, although I have seen samples of the finest of the European-made arms and own a Sauer-Mausier that is a gem in lines and finish.

The lines of the rifle are particularly handsome, the stock being long and with less drop than most of the sporting rifles we see. The comb is higher



than usual, resulting in a comfortable feeling of having something against which to press the cheek in shooting the rifle. A handsomer stock I have yet to see on a rifle, both as to shape and quality of wood used.

The fore-end is longer than those on the Mannlichers and Mausers usually exported to this country. The whole rifle gives the impression of being larger than usual and measurements confirm the impression. The receiver measures 8 inches around while the New Springfield measures about 7½ inches and the Mauser is ½ inch less. The grip is quite large and the entire stock is larger than usual. This rifle is of the grade made up for the English market and the makers have of course followed the English ideas. Made up according to American vogues as the Ross people make some of their rifles, there is no reason why the rifle should be larger than any other bolt action, except that the ones using the .280 cartridge have to be slightly larger through the magazine on account of the enormous size of the cartridges.

On taking the rifle apart we were struck more than ever with the careful attention to details that characterizes a very high grade shotgun and which most of us would like to get on our rifles. I have owned or used Mannlichers of three different makers, Mausers by three makers, English sporting Lee-Speeds and a couple of fine English double express rifles, as well as examples of every American rifle sold, with the exception of the new Standard automatic, and I want to place myself on record as saying that I have never seen a rifle better finished, better designed and that showed more honest, careful workmanship than this one. The German-made rifle has yet to cross my horizon that can touch this Ross in the respects mentioned and yet I swear by my Sauer-Mauser as being the finest little sporting made—excepting the Ross. The rifle is made under the old fashioned idea that an article should be made good enough to hand down to one's descendants—and the work charged for accordingly. With the short life of the modern high power rifle barrel, this careful attention to details may seem uncalled for as about the time the rifle was thoroughly entwined in one's affections, the barrel at least would be worn out.

The weight of the rifle is 8½ pounds, but this is over the standard weight, the extra ounces being due to the heavy wood in the stock. The long barrel also adds to this extra weight. The standard weight of these rifles with American stocks—lighter wood and smaller stock, using barrel 26 inches or 28 inches in length—is 7½ pounds. The Model "E" of the Ross, made for .303 British cartridges, is 6½ pounds, as is the Model "R." This rifle of mine is of course a little muzzle-heavy, having a long barrel intended for target work—in which case the muzzle-heavy tendency is a good thing to aid in holding. With the barrel cut off to 25 inches the rifle would be perfect in balance—if not too muzzle-light and were I going to use the arm for sporting purposes I would have the barrel cut off to this length.

This particular grade sells in Canada for \$70.00, which with about \$20.00 duty added, makes the rifle cost \$90.00 in the United States—rather an expensive plaything.

On account of this duty and also because of the wonderfully cheap price at which our lever action rifles can be made and sold in the United States, the

Ross Company make no effort for American trade, selling high class rifles to the English customers and the .303 rifles to their large Canadian trade. For this reason I feel free to criticize the rifle either favorably or adversely without being accused of "having it in for the rifle makers" or of being actuated by past favors from the importers, which a certain alleged genius stated impelled the bolt action advocates to argue in favor of their hobby. The Ross Company are not in the American market and we are therefore free to pick the rifle to pieces without compunction.

This rifle in my possession, differing from all other Ross rifles only in the absence of the finger piece that operates the magazine follower lifter and in a few other slight details from those of the military model, can be described as being typical of the entire Ross tribe. The cheaper rifles are of course not fitted with stocks of quite so expensive a wood. This is about the only difference between this and the cheaper grades, outside the caliber which is made in the high grade rifles alone.

Rifles vary mainly in their cartridge-handling mechanism and it is therefore logical to describe the Ross bolt and the magazine before touching on the other parts of the rifle.

The Ross is as most rifle lovers know, a straight-pull, bolt-action rifle. The up turn and pull back motion of the bolts used on practically all other bolt action rifles is simplified in the Ross to a straight pull back and push forward, the motion unlocking the bolt, extracting the cartridge, compressing the firing-pin spring, ejecting the cartridge, seating a new one and again locking the bolt.

On the straight pull rifle with which most of us are familiar—the Lee—the bolt was not locked at its forward end, was noisy to operate, complicated in construction—having many small parts—and was generally admitted to be less desirable than the rifles of the Mauser up-turn or down-turn type.

The Ross locks the bolt at the forward end by double locking lugs turning behind shoulders as on the New Springfield, Mauser and Mannlicher rifles. It is no noisier than the New Springfield, has no more parts, is fully as strong and is the fastest bolt-action rifle made. It is inferior to the New Springfield in ease of taking apart, in accessibility of magazine and in the type of extractor used. In many other respects it is superior to the Mauser type.

The description of the Ross bolt commences like Caesar's *De Bello Gallico*, through which we painfully dug in school. The bolt is divided into three distinct parts, which again consist of minor ones. The principle of the bolt will be made clear by stating that it works on the same plan as the well-known spiral screw drivers, which turn the screw by a push forward on the handle. Anyone who has examined these screwdrivers knows that the spindle or part driving the screw is cut into a series of spiral grooves, along which a lug in the handle runs, compelling the spindle to turn. This is in a nutshell, the Ross idea. The spindle on the Ross has the two locking lugs on its forward end. An inch back of the locking lugs two spiral—helical—to be technical—ribs commence, having a twist of one turn in six inches. These are 1-5 inch wide and 1-16 inch high. The spindle works in the bolt proper, a hollow, cylindrical affair, 5 inches long, fitted with the bolt handle, safety lock and the guide ribs that bear against the receiver. Inside



## TRAJECTORIES AT 800 YARDS AND 1000 YARDS

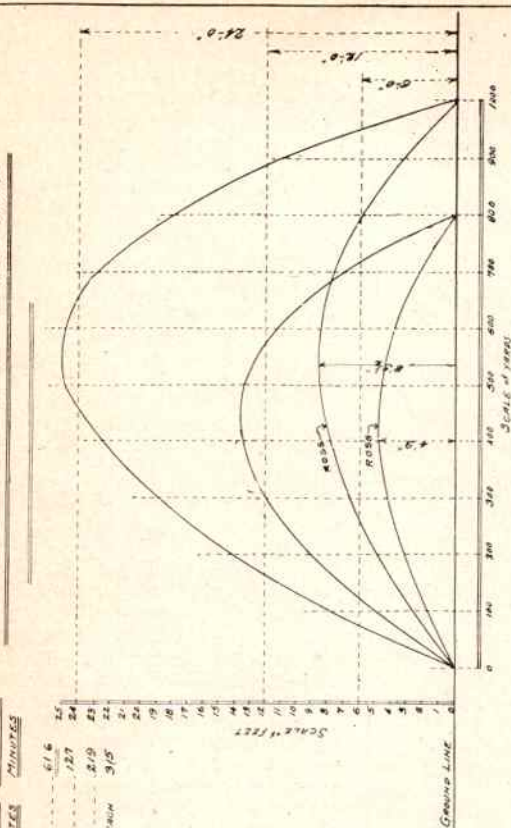
## 303 ANGLES

## ROSS ANGLES

## 303 ANGLES

## ROSS ANGLES

## 303 ANGLES



## TRAJECTORIES AT 800 YARDS AND 1000 YARDS

WITH A MUZZLE VELOCITY OF 3000 F.S.-303 BRITISH

BRITISH FIGURES TAKEN FROM TEXT BOOK OF SMALL-ARMS

ROSS TRAJECTORY (4 FEET 9 INCHES) AT 800 YARDS NEVER EXCEEDS THE HEIGHT OF A MAN.

THE STRIKING ENERGY OF THE ROSS, TAKEN AT MUZZLE, IS 1.6 TIMES GREATER THAN THE 303 BRITISH.

PRESSURE IS ABOUT 7000 LBS PER SQUARE INCH LESS THAN THAT OF PYRO-COLLIDION.

TEMPERATURE OF COMBUSTION IS LESS THAN THAT OF PYRO-COLLIDION.

EROSION AND ACCURACY-ON ACCOUNT OF THE LOW TEMPERATURE AND A SPECIAL PROPERTY OF THE POWDER

EROSION IS SLIGHT. EXPERIMENT SHOW THAT THE ACCURACY IS MAINTAINED LONGER THAN WITH

ANY WELL-KNOWN RIFLE, TO WIT, 303 BRITISH, MANNLICHERS AND MAUSERS.

A TABULATED COMPARISON OF THE ROSS AND THE BRITISH 303

## TRAJECTORIES

## 800 YARDS RANGE

## 1000 YARDS RANGE

## ROSS DIFFERENCE 303 ROSS DIFFERENCE

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this bolt are spiral rows of teeth, having the same twist as the ribs on the spindle and having channels cut through them to correspond with the ribs on the spindle. Looking through the bolt, the appearance is as though the inside had been threaded on a regular machine for that purpose, with the grooves 1-16 inch deep, then later the spiral channels had been cut down through the threads to accommodate the ribs on the spindle.

The rearmost ends of the two ribs are cut into teeth of the same pitch and height as those inside the bolt. The forward ends of the ribs are plain, as shown in the accompanying cuts.

The driving power of the bolt comes from the plain section of the ribs and the teeth do not mesh until the spindle is at its extreme forward position—when the bolt has been opened.

In practice, when the bolt is pushed forward, the ribs on the spindle, moving along the spiral channels inside the bolt, turn the spindle with the locking lugs. By the time the bolt is forward the locking lugs have been turned down from their vertical position, behind the shoulders in the receiver. The locked position of the bolt is different from that on Mauser, Mannlicher and the New Springfield types, the lugs turning down to a horizontal position to lock, while on the Mauser type, the lugs turn to a vertical position. The spindle revolves in the opposite direction from the common turn-bolt, turning to the left instead of to the right.

The locking lugs on this rifle are not solid like those on the common type of bolt action rifle, but are cut into three sections, like sections of a very heavy screw. The rear faces of these sections are flat and cut of course perpendicular to the bolt's axis. The forward faces are cut on a bevel. The pitch of the lugs is about .333. These sections turn down behind corresponding shoulders cut in the receiver and there is as much metal in the three sections on each lug as in the solid lug of the Mauser. I would prefer trusting to this bolt in case of an overcharge rather than to depend upon the Mauser type—and that has proven itself amply strong. The Ross has been tested by the United States Government to 100,000 pounds which it stood successfully.

Inside the hollow spindle runs the firing pin—similar to that used on other bolt action rifles. The main spring is confined between a screw collar on the rear end of the firing pin and the forward end of the spindle. A detachable firing pin head containing the sear notch, and the two notches in which the safety bolt operates, slips on over the head of the firing pin, being held on by a thick pin passing through the firing pin head and through a slot in the firing pin. This pin, however, is not of the semi-rivet type used on many rifles, but is barrel shaped and can be pushed out by a lead pencil when the pressure of the main spring is removed. The spindle passes nearly through the bolt, when the rifle is closed, being 4 inches long from the rear end to the rear faces of the locking lugs, while the bolt is 5 inches long.

The bolt itself is of course cylindrical in shape, the inside being a true cylinder, the outside being broken up by the ribs. Along the sides of the bolt run two ribs 3-16 inch wide and 1-16 inch high, in this case polished to a mirror-like smoothness—as is the entire friction surface of the bolt. These ribs run in under-cut grooves in the sides of the

receiver, holding the bolt perfectly true and taking away that wobble found in most bolt action rifles—and in poorly fitted ones, resulting in a slight binding. Along the bottom of the bolt,  $\frac{3}{4}$  inch apart run two other ribs or wings, 3-32 inch high, the sides of which bear against corresponding projections on the receiver and which assist in preventing any side movement of the bolt in its travel back and forth.

The forward end of the left hand rib on the side of the bolt terminates in a shoulder. This strikes against the bolt stop when the bolt is opened.

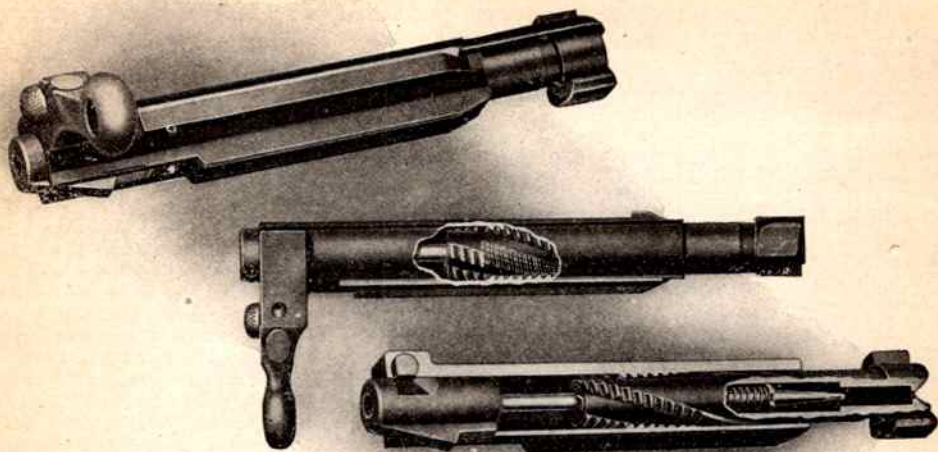
The extractor is nearly as long as the bolt. It is of the common hook type used on the Mauser but instead of being fastened to the bolt by a collar it is set in a slot cut along the top of the bolt. Only this extractor and the raised rib on the top of the bolt show when the bolt is in the rifle, no bright parts being in sight. The extractor is blued, as is the raised part of the bolt beside it so the bolt harmonizes with the rest of the rifle in finish.

The extractor, while amply strong to do the work is inferior to that used on the Mauser and the New Springfield in that it does not engage the rim of the shell until the bolt is entirely closed. The extractor of the Mauser is rounded on its lower edge and the cartridge slips into its grasp before it is within 3 inches of its seated position in the chamber. However, the Ross extractor is of the same type in this respect, as that used on the Krag, looking much like it in fact, and as the Krag extractor gave good satisfaction through its long course of service, it is probable that the Ross type would make but little trouble. Lever action rifles are of course made this way almost without exception and it is the exception rather than the rule to find an extractor taking hold of the cartridge before it is seated. The advantages of the Mauser type are obvious in case of a cartridge that refuses to go into the chamber.

The handle on the Ross is the most graceful in shape of any bolt made. It is a flat, handsomely shaped piece, extending straight out from the bolt for half an inch and then dropping down an inch. It terminates in a flat ring, intended to be grasped between the thumb and forefinger. Through the upper part of the bolt handle and set just out of the way of the fingers, runs the safety bolt, a straight quarter inch bar that passes through the bolt and engages in the receiver on the left side, when in operation. A flat thumb piece with "Safe" and "Ready" engraved on it, is set at right angles to the safety on its outer end.

The rifle may be locked whether cocked or not. The bolt of the safety passes through the bolt itself, just above the firing pin head. At the ready position the flat side of the safety permits the firing pin head to pass. At the safe position the safety cams back the firing pin head away from the sear and finally turns down in front of it, its rounded side projecting into the channel of the firing pin head preventing it from going forward regardless of a jar the rifle might receive. The safety bolt moves forward as it is turned, its seat being threaded to correspond with threads on the safety bolt itself. Moving forward, the safety bolt enters a recess in the left receiver wall, preventing the bolt from being moved in the least and at the same time, as shown, turning down before the firing pin head as well. The safety is as safe as any device I have seen and





UNDER SIDE OF THE BOLT, SHOWING THE FOUR BEARING POINTS

is infinitely more handy to operate than the Mauser, Krag or Mannlicher type. Closing the bolt, one can put the safety on by a slight push forward of the thumb without moving the hand from the bolt handle. The chances for accident caused by fumbling around for the safety of a loaded rifle after closing the bolt are cut down to a minimum through this construction. The only objection I found to it is a minor one—that being that the thumb piece is set so close to the fingers that it rubs at times against the forefinger when operating the rifle.

In operation when the bolt is pushed forward, the movement forward of the locking lugs and spindle is stopped by the left lug striking a projection inside the receiver. The pressure back of the bolt, pushing it forward up the spindle, revolves the spindle through the action of the ribs mentioned and the locking lugs turn down into their recesses in the receiver, the slight forward motion imparted by the pitch of the lugs seating the cartridge with but little effort.

In opening the bolt, the bolt handle with the cylindrical portion moves backward a full inch while the locking lugs are being turned out of their seats, the spindle of course remaining motionless save for its turning motion imparted by the ribs sliding in the bolt's helicoidal channels and the slight backward motion through the pitch of the engaging lugs. As the bolt moves back 1 inch, the cartridge is started back about 1-32 inch from the backward motion of the locking lugs. The teeth on the spindle and bolt mesh, preventing the main spring from turning the bolt head when the bolt is open.

The firing pin head, sliding in its slot in the bolt, is drawn directly to the rear with the first movement of the bolt, compressing the main spring. With the main spring compressed and the locking lugs turned clear of their recesses, the bolt moves

back until the cartridge comes into contact with the ejector in the left wall of the receiver, when the cartridge is kicked out upward and to the right. In this Ross rifle, the cartridge is thrown upward and forward from the shooter instead of straight out to the right as with the Mauser rifle.

On the bolt being pushed forward, the firing pin head engages the sear nose which prevents its further forward movement until the trigger is pulled.

The bolt is quite short as compared with other rifles of the bolt action persuasion. The bolt of the New Springfield, is  $7\frac{1}{8}$  inches with the cocking piece forward. The Ross is 6 inches long in its fired position. This results in a very short throw of the bolt, one of the things that go to make up the wonderful speed of the arm.

The Ross bolt stops  $\frac{1}{4}$  inch short of the comb, when open, the New Springfield bolt slides back 1 inch beyond the comb. With the long stock of the Ross, the shooter can hold his head against the stock and work the bolt without the least fear of being stuck in the face. With the New Springfield, having the long bolt and the short  $12\frac{1}{4}$ -inch stock, the user must duck his head to the left or stop the bolt with his face—hard on the face in some cases, on the bolt in others. The Ross is without question the fastest bolt action rifle made and need fear nothing from the fastest of the lever actions even with cartridges giving light recoil. The motion is a lightning-like snap back and forth of the wrist, short crisp and with but little effort. The writer has been accustomed to the New Springfield and the Krag in rapid fire and has practiced until he has acquired a fair amount of proficiency. But after using the Ross for a couple of weeks, the up-turn and down-turn motion of the other rifles was fairly painful to go through. The nearest factory being in England and the ammunition being too valuable to waste, the writer did not



devote much of it to rapid fire but the little fired in this way persuaded him that the Ross could make one of the Benet-Mercies sit up and take notice in the hands of one used to the Ross.

One of the most noticeable things about the Ross bolt is the lack of side-play when the bolt is opened. Owing to the short bearing and necessary loose fitting the Mauser or the New Springfield bolt has considerable play when in its opened position, my own New Springfield having a movement of 3-16 inch from side to side at the rear end. The Ross is as rigid open as closed, having less than 1-16 inch play when taken in the fingers and pushed from side to side. When the bolt is closed and the safety is on, absolutely no movement can be detected. The smooth, easy, frictionless and noiseless sliding of the bolt is a revelation to one used to other bolt actions—excellent as most of them are.

The Ross bolt moves but a short distance, as compared with other rifles of this breed. The opening between the head of the open bolt and the receiver is on the Ross but 4 inches. The New Springfield is 4½ inches.

The fitting of the Ross bolt is so smooth and the working of the locking lugs so easy that the bolt on this rifle, with the pressure of the main-spring re-

moved, will *fall open*, when the rifle is held vertically. That is, the slight weight of the bolt will cause it to slide back, *turning the lugs out of their seats* and the bolt will slide to its open position. Of course this is impossible with the firing pin head on the bolt as the opening motion in that case compresses the spring.

The man who is familiar with the bolt action tribe and who has been through several wrestling matches with sticking cartridges, will come to conclusion on examining the bolt that it lacks power over the cartridge, i. e., that a sticking shell either in closing or opening the rifle would cause a cessation of proceedings until a sledge hammer could be procured. It is well known that the Remington auto-loader, which works on much the same idea as the Ross in locking the bolt and seating the cartridge, will jam beautifully at times, through lack of power over the cartridge both in seating and extracting it. My friend Knoble, a lover of automatic arms and an inventor of several, admits that he has had at times to take a piece of timber and drive open the Remington bolt, after it had been closed on a sticking cartridge. On other occasions the rifle will not chamber a tight shell. This would happen but rarely with factory ammunition, of course.

[TO BE CONTINUED]

See page 189

## STARTING THE BULLET RIGHT

(Extract from "The Bullet's Flight from Powder to Target")

**F**OLLOWING the efforts of Dr. Mann and his associates in their endeavors to locate the cause of error in rifled arms, it will be noticed that the logical theory that a bullet must be seated concentric with bore of the rifle to secure accuracy of flight, early become a fixed conviction in their minds and strongly influenced all of their earlier experiments. In their attempts to prove this theory much original work was done, and many forms of bullet were tried. Figure 1 shows the original plaster-of-paris mould; the bullet standing on one-half of the plaster mould was first made from a simple chunk of lead and fitted by repeated swaging and passing the barrel and trimming with jack knife until the rifle grooves were comparatively perfect on its sides, its oval points centrally balanced, and base at right angles to the body. Then the plaster-of-paris mould was made by aid of the first bullet and several others were cast in it, one of which represented at the lower right hand corner of the illustration. These bullets were used in the old .44 caliber muzzle loader but the most careful methods of loading, aiming and holding by the eager young investigators failed to disclose the cause of the error as it had already been named. In 1879 the experimental work was

continued with a rim fire, .32 caliber rifle made by Frank Wesson. It was a finely finished breech loader, and a fair sample of the best of its kind made forty years ago and occupied my experimental rifle days for the next two years, though proving as unsatisfactory in its performance as the old .44 muzzle loader, making even larger errors at 35 yards.

It was 15 years after experimenting with the Wesson rifle or during July, 1894, before owning my first rifle, the intervening years being given to student life at two universities, and work connected therewith. This first rifle was a Stevens .32-40, 26-inch barrel, Mogg telescope, and with a special chamber cut by myself. Two or three years were spent in designing this chamber, discarding one design after another, before one was completed and sent to the Ideal company. The sole object of it was to compel the bullet to enter the bore immediately in front of the rifle chamber true with the axis of its bore. So far as known at the time, no form of ammunition or rifle chambers, regularly made, complied with sufficient accuracy to this requirement, all being made rather to assure an easy and uncomplicated insertion of the cartridge. This is not intended



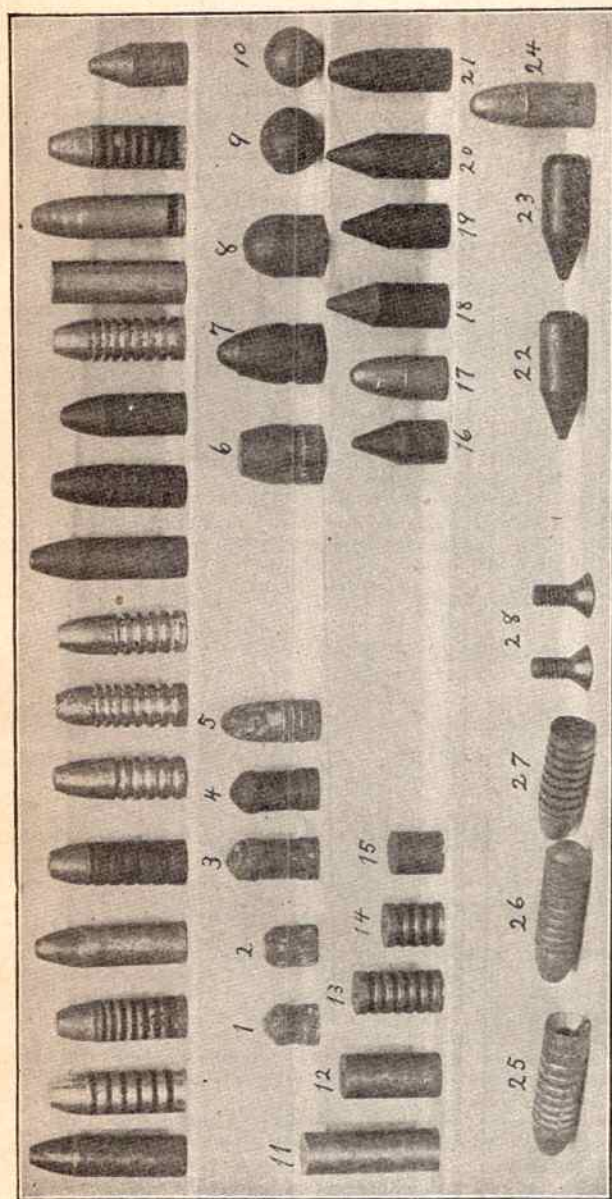


PLATE 1

as a reflection upon manufacturers, for it is true that they had made great improvements over the old muzzle loading round bullet affair, and commercial needs required that the arm and its ammunition should be easily and safely handled by the class of workmen to whom they catered. The final design under which the chamber was made was simple enough. The chamber and the steel swage for the bullet, as also the swage for reducing the Ideal .32 shell, were all made

with the same taper reamer, .008 taper to the inch. The bullet, after being swaged tapering, was dropped into the taper chamber, and the loaded, tapering shell was dropped in after it, and this is termed "front seating" in contradistinction to fixed ammunition. The front end of the bullet was .315 inch, the same diameter as the bore of the rifle, and the large or rear end was .320, corresponding to the groove diameter, while the mouth of the shell fitted up snug to base of the bullet. The rifling or grooves in bore of a rifle are usually cut about .003 inch deep, but vary somewhat. The grooves being thus cut would make what is termed the groove diameter .006 inch larger than bore diameter, the latter being the size before grooves were cut. It was thought that the bullet resting in the throat of the rifle, as explained above, on a true taper with the lands left by the tapering reamer in the chamber, must be in position before discharge to lay straight and central with the bore. The bullet seated itself by its own weight. It had not been deformed by forcing it into the shell or into a rifle bore smaller than itself. It had not been deformed at its base by pressure from a bullet seater. Being deformed independent of the shell, in a tapering swage identical with the taper of the chamber, it must not lie in the chamber, taking the same position that it did in the swage. This was a chemical certainty and (Figure 3) is a correct illustration, exact size, of the two different lengths of the taper shells which were produced from the Ideal .32 shell by swaging, and they fitted the taper of the chamber. This special chamber was also designed to make front seating more practical by abolishing the cumbersome bullet seater, and doing what a bullet seater will not do, that is, to enter the bullet central and straight with the bore. My several rifle friends rather smiled at the particular nicety displayed in this matter, averring that the bullet was entered central and straight with the bore, either with a bullet seater or when shot from a shell, and it required several years' controversy, with material proof tests in evidence, before a single rifleman showed signs of being convinced that such was not the case. Still unconvinced of the necessity of absolute correctness in this matter, they failed to comprehend the utility of so many weeks and months spent in trying to overcome so slight an error as could possibly exist in the ordinary fixed ammunition and commercially made chamber. The only reply that could be made to such a criticism was through the



Yankee way of answering a question by asking another, viz.: Why are you so particular in your attempts to make an accurate shot or a good score? A special feature of this chamber was its design to take a tapered, ungrooved, non-lubricated bullet; and if a soft one was found to lead the bore, another antimony and lead was to be used. If the trouble came from this, a copper-plated one would be tried. To prevent the blast from the muzzle throwing the bullet wild, a spherical base bullet suggested itself, reasoning that such a hemisphere in front of the blast would offer no sharp edges for its leverage.

Four varieties of bullets were made for this particular ammunition and chamber, each of two lengths; one oval point, one sharp cone-shaped point, one flat base, and one hemispherical. The adjustable mold, swages, and chambering tools for these eight bullets were comprised in one order to the Ideal Company, while the dies for reducing the Ideal shell were made in the home shop. The Mogg telescope was for the express purpose of testing with certainty the accuracy of this particular ammunition and chamber. A cast-iron forestock, weighing six pounds, extending from the rifle action to its muzzle, was made to increase its weight if desired, fitted to the barrel with melted lead. But no practical method was found of attaching it immovably to the barrel; screws were of no value; any amount of waxed twine would yield after several shots, allowing the iron forestock to slip forward; besides this, tight binding would spring the barrel because the lead casting, upon cooling, did not conform itself perfectly to it, therefore the rifle was not tested at target with this extra forestock.

The plate (1) on opposite page well represents some of the bullets experimented with during about 10 years, commencing with the old .44 caliber round ones. It will be found somewhat interesting by comparing one with another.

Figures 1, 2, 3 and 4 were cast from a home-made steel mold 12 years prior to experimenting with those represented in the upper row, and were made to use in F. Wesson's .32 caliber rim-fire rifle.

Figure 5 is one of F. Wesson's best bullets for .32 rim-fire.

Figure 6 and 7 were made for the old muzzle-loading .44 caliber of 1868.

Figure 8 was made for the same rifle by means of a home-made plaster-of-paris mould.

Figures 9 and 10 were the regular round bullets for same rifle.

Figures 11, 12, 13, 14 and 15 are some .32 caliber cylinder bullets made for experimental purposes.

Figures 16 to 24 inclusive were designed for the special Stevens rifle with its Mogg telescope of 1894.

Figure 25 is a hollow base bullet into which brass screws represented by Figure 28 were placed and swaged in.

Figure 26 is a hemispherical base bullet of 1892.

Figure 27 is the Figure 25 bullet completed with the screws shown in Figure 28.

At this early stage of experimenting I had no acquaintance among riflemen with whom to com-

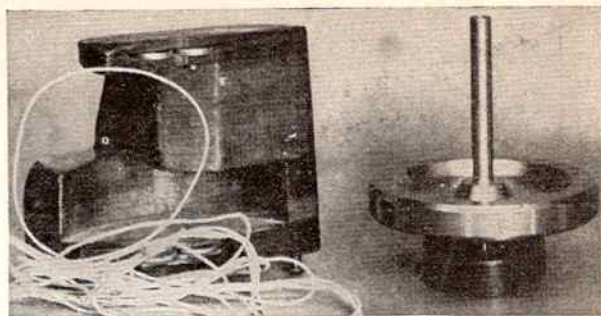


FIGURE 4

pare notes or from whom to obtain suggestions; had never seen a telescope rifle, knew nothing of any governmental experimenting, almost nothing of the refined methods in use upon different rifle ranges, and had read but few books, papers, or articles upon the subject. True, in a general way, I knew of rifle tournaments and competitions, but the erratic shooting so often displayed savored more chance than science. It was therefore intentional on my part to investigate in my own way, unhindered by previous experiments of others, all of which seemed to have overlooked the vital error. This peculiar disposition not to follow the crowd kept me alone and emphasized a disregard for the conclusions as stated by others unless such were self-evident. To one who is delving and plodding after the reason for things, the unexpected frequently happens while expected or sought after results elude the grasp. Testing a theory experimentally has been found, however, a pretty tedious process compared with the rapid work of brain in compounding it.

During my student days repeated trials were made to produce a spinning top that was perfectly balanced, and many of different sizes, shapes, and of different metals were turned in the lathes supplied to the students of Cornell University.

A top so perfectly balanced that it would keep standing position after coming to a standstill was the desideratum; though known to be as impossible as perpetual motion, the very fascination of the idea kept pushing the attempt further and further. Some beautiful tops had been finished, to the amusement of friends, when the subject was dropped, partly on account of other pressing duties. Ten years later, however, with improved machinery, material, and new experiences at hand, the manufacture of tops and gyroscopes was again commenced, the work becoming more and more refined. Finally, by submitting the finishing of the hardened tool-steel top to Brown & Sharp, of Providence, mechanical perfection was undoubtedly obtained, yet the spinning top would tremble and hum, showing that its balance was not perfect. Without knowing at the time, and without the rifle question coming to mind in connection with balancing of this almost perfect steel disk, it was found to have a close relation to the bullet in rifle shooting, as will be noticed later. The negative from which this half-tone (Figure 4) of the spinning top was made was exposed for 20 minutes while it was spinning, and the top continued spinning for 35



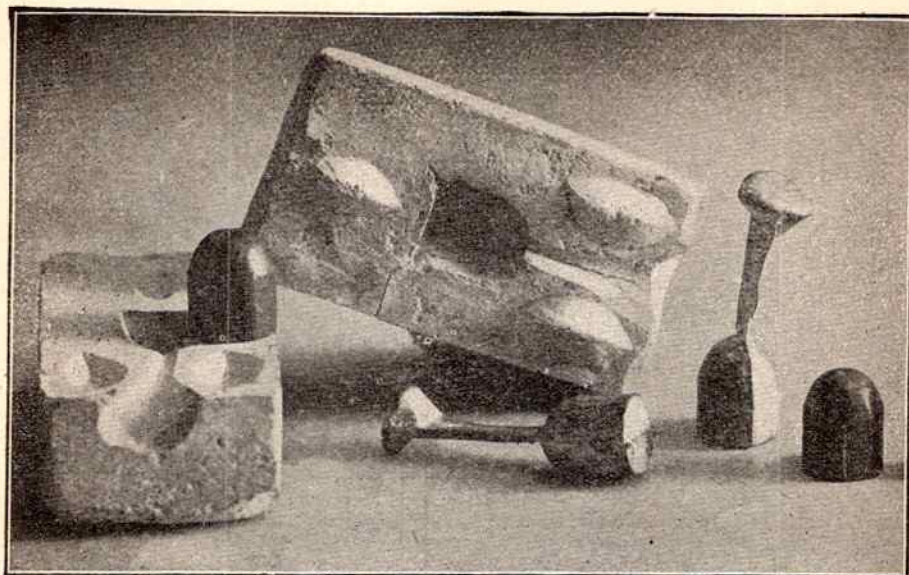


FIGURE 1

minutes. Photographers can readily understand how well balanced this top must have been to make a perfect print. Of course the block at left of cut, from which the top was spun, was motionless, as was also the string which spun it, and similarity presented in the minute detail of the several figures would suggest that the top was also stationary.

The amount of labor and time spent in experimenting to produce a disk that would spin like this need not be detailed in this connection, except to draw attention to the relation of this spinning top and slight motion of its spindle to the spinning bullet upon the air, and the possibility of obtaining perfection.

Turning from this digression regarding spinning tops back to rifles; before this Stevens special chambered one was thrown aside an old timer, a long-range telescope man showed up who said that two errors appeared in the mounting of the Mogg's scope: the tube would take two different positions in its front ring, and the binding screw in the rear mount held the tube so firmly that if tension was placed on the center it would not return to its normal position. This discovery divided my rifle work into separate lines for several following years:

One to overcome the inaccurate flight of bullets, and the other to construct telescope mountings which should combine reliability with the necessary accurate methods for adjustment. From this time, during the following twelve years, all my practice was group shooting, for reasons which must now be obvious, and all at 100 yards; during this time also all groups made, with the rifle barrels, some 30 or more, have been filed and preserved for purposes of comparison and study later. No doubt it is safe that no rifleman in America has kept every target made for twelve years, as has been done in this case, usually keeping, showing, and publishing only their best scores. With my recorded tests the best groups are considered only as fortunate

or accidental and are not the important ones which demand attention.

#### WINCHESTER-BALLARD, 36-INCH BARREL

Some time previous to 1895 a special .32 caliber was ordered, but after waiting until patience ceased to be a virtue, a .32-40, 36-inch (their longest), No. 4, full round barrel, factory made, was ordered from the Winchester people that shooting might be commenced with the club.

The first test: This was made April 5 and July 16, 1895; unlubricated, non-grooved bullet, making six 5-shot groups; the smallest was 1, largest 2.12, average 1.56 inches. With several groups there was no leading, but with some there was. It was not certain that all lead was removed between shots but most of it was. These 214-grain bullets, 29 grains heavier than the twist, was cut for, showed only normal tip, not greater than the regular ones. With this shooting 45 grains of powder were used, a thin felt wad, 214 grain, medium long-pointed, lead bullet, swaged cylindrical to .315 inch; non-grooved, non-lubricated, seated  $\frac{1}{4}$  inch beyond chamber; Ballard action rifle, double rest, telescope sight, and the barrel swabbed after each shot with kerosene and machine oil, half and half, the oil being partially wiped out after each shot. This is next to the largest of the six groups and measures two inches. All groups made and recorded are measured in this manner, that is, the distance between centers of the two shots widest apart. This two-inch group (Fig. 5) indicates that some error exists aside from entering the bullet central and straight in the bore before discharge, because these bullets were so entered. The close similarity between the above and the then famous Chase-patch system of the Massachusetts Rifle Association, Crank's Corner, Walnut Hill, omitting only the paper patch and substituting thin oil for water, will be remarked. The .315 inch cylindrical bullet seated itself in the .32 caliber bore "like old cheese,"



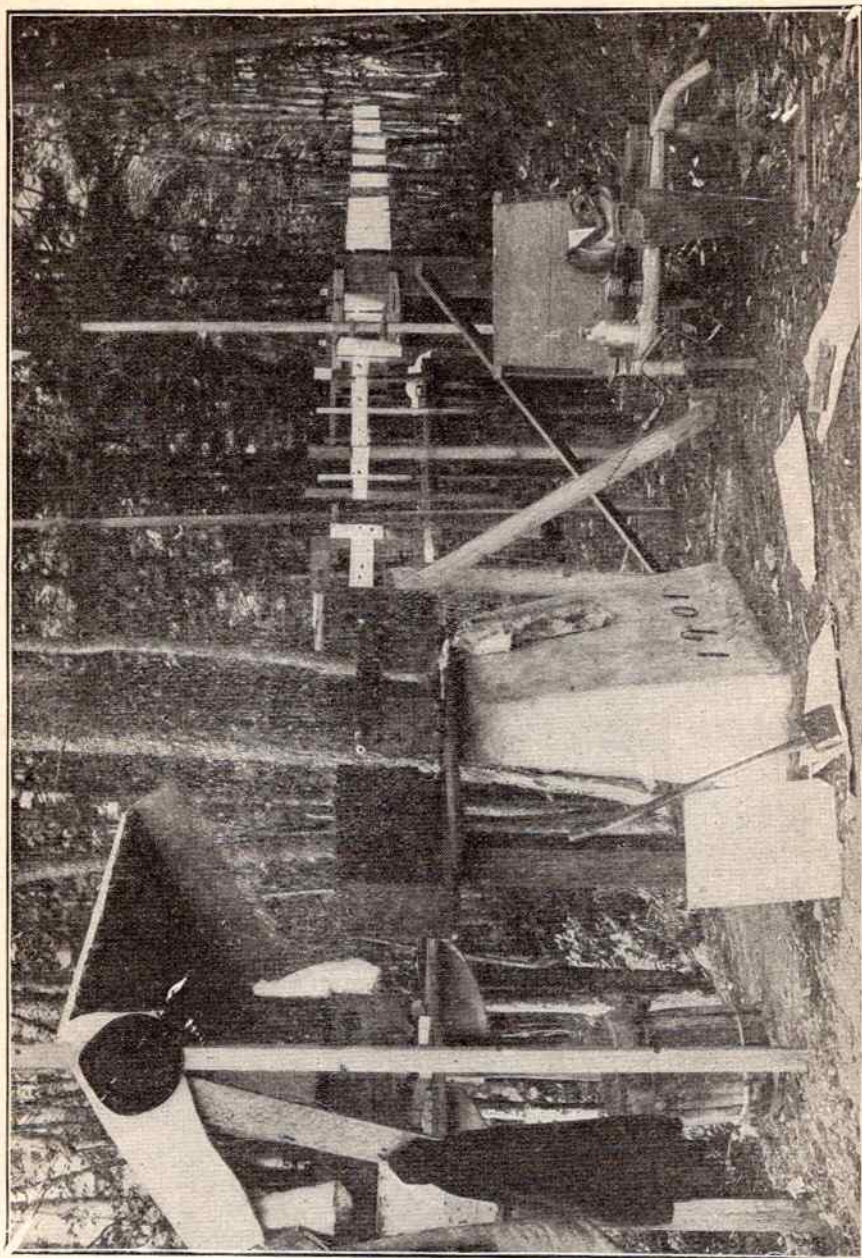


PLATE 5, SHOWING THE CONCRETE PIER, IRON BED WITH ITS IRON BRACKETS, V REST AND RECOIL BLOCK FROM WHICH THE TESTS WERE MADE

an expression originating at Walnut Hill. So far as could be learned the above test was contrary to all rifle ideas at the time or since. Although practically identical with the Chase system, that is not why it was employed, but rather due to a conviction that a bullet larger than bore diameter could not, with any certainty, be entered straight or central with it, either with a bullet seater of any construction or a charge of powder. This cylindrical, bore-diameter bullet, therefore, was so made

that it would be possible to enter it point on in the bore ready for discharge, and there can be little doubt but it upset into the grooves sufficiently for all demands of rotation. There is no question but the Chase-patch system which gave bore-diameter bullet, first suggested to the writer the theory of its superiority, though from the beginning, a patched bullet was a thing that must be eliminated, else a target rifle would not be practical in the hunting field.



# SOME PATTERNS MADE WITH STANDARD LOADS

By CHAS. STILLMAN

IT is quite a general opinion among devotees of the scatter gun that the pattern of any particular weapon is largely dependent upon the size of the bore. There may be a few dissenting minds who hold to the contrary opinion but the majority of sportsmen whom the writer has enjoyed meeting at the clubs and in the field, are inclined to believe that the spread of shot is more or less influenced by the diameter of the bore, and that the sixteen and twenty gauges will shoot their proper charges much closer than the ten or twelve bores. This does not seem to be the case in actual practice, however, and although the writer's experiments have been mostly confined to the twelve gauge, the few trials made with the sixteen and twenty bore, rather points out that the pattern of a gun does not so much depend upon the size of the bore as upon the nature of the boring of the barrel. These few experiments were made last August, with the idea of satisfying the writer's curiosity as to the comparative shooting merits of the twelve bores in his cabinet. Naturally, these trials were confined to but a few makes

of guns, but as the experiments were very carefully conducted to ascertain the variations in the patterns of the different borings, the data given may possibly prove interesting reading to fellow users of the smooth bore. It may be mentioned, that the patterns were made by counting the number of pellets grouped within a thirty-inch circular target at forty yards. The standard powder charge of three drams of black powder and equivalent load of 30 grains of Walsrode Dense Nitro was used in all the trials, and the powder and shot loads were accurately measured and uniformly loaded with the No. 2 Ideal Loading Machine.

The first series of patterns were made with a well known American gun, full choke and at one hundred targets. The targets were of paper, four feet square, and the patterns represent the actual number of pellets falling within a thirty-inch circle at forty yards. For ease in referring to the varying shots, the best patterns with a given load of shot are arranged in tabular form, and designated as table No. 1, 2, etc.

Full Choke Table No. 1—20 Shots. Black Powder:

| Weight of Shot Load | Size of Shot and Number of Pellets in Circle |     |     |     |     |
|---------------------|----------------------------------------------|-----|-----|-----|-----|
|                     | 4                                            | 5   | 6   | 7   | 8   |
| 1½-ounce            | 171                                          | 219 | 272 | 299 | 339 |
| 1¼-ounce            | 154                                          | 195 | 242 | 269 | 305 |
| 1 -ounce            | 139                                          | 173 | 215 | 241 | 273 |
| ¾-ounce             | 120                                          | 152 | 188 | 209 | 237 |

Full Choke Table No. 2—20 Shots. Nitro Powder.

| Weight of Shot Load | Size of Shot and Number of Pellets in Circle |     |     |     |     |
|---------------------|----------------------------------------------|-----|-----|-----|-----|
|                     | 4                                            | 5   | 6   | 7   | 8   |
| 1½-ounce            | 165                                          | 208 | 256 | 283 | 321 |
| 1¼-ounce            | 148                                          | 186 | 232 | 257 | 289 |
| 1 -ounce            | 130                                          | 166 | 207 | 230 | 259 |
| ¾-ounce             | 116                                          | 144 | 180 | 200 | 227 |

Full Choke Table No. 3—20 Shots. Nitro Powder.

| Weight of Shot Load | Size of Shot and Number of Pellets in Circle |     |     |     |     |
|---------------------|----------------------------------------------|-----|-----|-----|-----|
|                     | 4                                            | 5   | 6   | 7   | 8   |
| 1½-ounce            | 150                                          | 192 | 238 | 270 | 291 |
| 1¼-ounce            | 140                                          | 176 | 217 | 240 | 272 |
| 1 -ounce            | 119                                          | 151 | 178 | 196 | 224 |
| ¾-ounce             | 104                                          | 132 | 163 | 181 | 212 |

Full Choke Table No. 4—20 Shots. Black Powder.

| Weight of Shot Load | Size of Shot and Number of Pellets in Circle |     |     |     |     |
|---------------------|----------------------------------------------|-----|-----|-----|-----|
|                     | 4                                            | 5   | 6   | 7   | 8   |
| 1½-ounce            | 145                                          | 175 | 224 | 242 | 277 |
| 1¼-ounce            | 122                                          | 158 | 197 | 218 | 251 |
| 1 -ounce            | 110                                          | 143 | 178 | 197 | 230 |
| ¾-ounce             | 101                                          | 122 | 156 | 170 | 197 |



Full Choke Table No. 5—20 Shots. Black Powder.

| Weight of Shot Load | Size of Shot and Number of Pellets in Circle |     |     |     |     |
|---------------------|----------------------------------------------|-----|-----|-----|-----|
|                     | 4                                            | 5   | 6   | 7   | 8   |
| 1½-ounce            | 130                                          | 161 | 214 | 230 | 240 |
| 1¼-ounce            | 126                                          | 150 | 190 | 199 | 212 |
| 1 -ounce            | 99                                           | 130 | 141 | 188 | 200 |
| ¾-ounce             | 86                                           | 90  | 114 | 171 | 196 |

The grouping of the pellets was especially good in the first four series of twenty shots, but the fifth showed a considerable gap and would, no doubt, allow the bird to get by. For the most part, the pellets were distributed quite evenly throughout the thirty-inch circle, and as a whole the patterns are very good, although neither the percentage of the charge in the circle, nor the average count of pellets are exceptionally high. Indeed, the entire series of trials are probably not above that secured with the average gun. All the guns used in these trials have done considerable shooting, and this fact should be taken into consideration when comparing the patterns of different guns of the same size and boring. A full choke when new, will for obvious reasons shoot much closer than when the metal has worn thinner at the muzzle end, as in the latter instance, the choke has been more or less shot out and the bore more closely approaches that of a modified choke. A modified choke will likewise wear at the muzzle end and produce a more open pattern. Of course, it requires a great deal of use to appreciably alter the taper of the barrel, but the difference in pattern may be readily detected when comparing the targets made with new and old guns of the same make, gauge and boring.

The second series of eighty shots were made with a high grade English gun of modified choke, under the same conditions as the first series of trials.

Modified Choke Table No. 1—20 Shots. Nitro Powder.

| Weight of Shot Load | Size of Shot and Number of Pellets in Circle |     |     |     |     |
|---------------------|----------------------------------------------|-----|-----|-----|-----|
|                     | 4                                            | 5   | 6   | 7   | 8   |
| 1½-ounce            | 127                                          | 159 | 189 | 200 | 229 |
| 1¼-ounce            | 112                                          | 140 | 170 | 180 | 208 |
| 1 -ounce            | 98                                           | 129 | 161 | 173 | 190 |
| ¾-ounce             | 80                                           | 86  | 130 | 151 | 179 |

Modified Choke Table No. 2—20 Shots. Black Powder.

| Weight of Shot Load | Size of Shot and Number of Pellets in Circle |     |     |     |     |
|---------------------|----------------------------------------------|-----|-----|-----|-----|
|                     | 4                                            | 5   | 6   | 7   | 8   |
| 1½-ounce            | 111                                          | 145 | 187 | 200 | 226 |
| 1¼-ounce            | 104                                          | 132 | 164 | 187 | 204 |
| 1 -ounce            | 91                                           | 121 | 152 | 170 | 196 |
| ¾-ounce             | 78                                           | 94  | 126 | 139 | 178 |

Modified Choke Table No. 3—20 Shots. Nitro Powder.

| Weight of Shot Load | Size of Shot and Number of Pellets in Circle |     |     |     |     |
|---------------------|----------------------------------------------|-----|-----|-----|-----|
|                     | 4                                            | 5   | 6   | 7   | 8   |
| 1½-ounce            | 103                                          | 130 | 168 | 180 | 194 |
| 1¼-ounce            | 94                                           | 121 | 149 | 170 | 181 |
| 1 -ounce            | 81                                           | 104 | 120 | 140 | 159 |
| ¾-ounce             | 72                                           | 90  | 104 | 123 | 126 |

Modified Choke Table No. 4—20 Shots. Black Powder.

| Weight of Shot Load | Size of Shot and Number of Pellets in Circle |     |     |     |     |
|---------------------|----------------------------------------------|-----|-----|-----|-----|
|                     | 4                                            | 5   | 6   | 7   | 8   |
| 1½-ounce            | 99                                           | 124 | 152 | 167 | 180 |
| 1¼-ounce            | 80                                           | 94  | 129 | 140 | 161 |
| 1 -ounce            | 71                                           | 84  | 114 | 128 | 139 |
| ¾-ounce             | 60                                           | 75  | 90  | 118 | 124 |

The third series of patterns, consisting of sixty shots, was made with an American gun of cylinder bore. This particular gun is a plainly finished, inexpensive arm but a good shooting iron withal.

Cylinder Bore Table No. 1—20 Shots. Black Powder.

| Weight of Shot Load | Size of Shot and Number of Pellets in Circle |     |     |     |     |
|---------------------|----------------------------------------------|-----|-----|-----|-----|
|                     | 4                                            | 5   | 6   | 7   | 8   |
| 1½-ounce            | 91                                           | 122 | 150 | 164 | 187 |
| 1¼-ounce            | 86                                           | 110 | 121 | 134 | 170 |
| 1 -ounce            | 76                                           | 94  | 109 | 121 | 154 |
| ¾-ounce             | 66                                           | 80  | 90  | 104 | 122 |



Cylinder Bore Table No. 2—20 Shots. Black Powder.

| Weight of Shot Load | Size of Shot and Number of Pellets in Circle |     |     |     |     |
|---------------------|----------------------------------------------|-----|-----|-----|-----|
|                     | 4                                            | 5   | 6   | 7   | 8   |
| 1½-ounce            | 81                                           | 108 | 132 | 148 | 165 |
| 1¼-ounce            | 76                                           | 96  | 121 | 132 | 154 |
| 1-ounce             | 57                                           | 65  | 89  | 109 | 128 |
| ¾-ounce             | 52                                           | 63  | 79  | 99  | 120 |

Cylinder Bore Table No. 3—20 Shots. Nitro Powder.

| Weight of Shot Load | Size of Shot and Number of Pellets in Circle |     |     |     |     |
|---------------------|----------------------------------------------|-----|-----|-----|-----|
|                     | 4                                            | 5   | 6   | 7   | 8   |
| 1½-ounce            | 79                                           | 106 | 130 | 144 | 162 |
| 1¼-ounce            | 75                                           | 104 | 119 | 130 | 150 |
| 1-ounce             | 66                                           | 90  | 104 | 116 | 127 |
| ¾-ounce             | 59                                           | 89  | 101 | 110 | 119 |

The barrels of the guns referred to were each 30 inches long, and chambered for 2½-inch standard paper shells. As the reader will note, there is a considerable variation in the patterns made with the same load, and many shots included in the tables are below the average, although great care was taken to load all the shells as uniformly as possible. This variation in the pattern of the several shots is obviously not the fault of any particular gun or gauge, since it occurs in full choke, modified choke and cylinder bores, from eight down to twenty gauge, of every known make. Why this should be so is not clear to the writer, and while the query has been often put to gun makers and other experts, this variation cannot be accounted for, although many gun men think the difficulty may lie in the varying strength of the primers. The substitution of nitro for black powder does not seem to make any material difference as far as uniformity was concerned, as may be noted by referring to the table of shots made with these powders.

As to the comparative patterns of the different gauges, the few trials made in this direction seems to indicate that the larger bores give closer patterns than the smaller guns, and in a recent trial a dozen shots were targeted with each bore. The twelve averaged 180; sixteen gauge, 160; twenty gauge, 144. The powder charges were standard for each size gauge, and one ounce No. 6 shot was used. Owing to lack of time, the writer has not had an opportunity of trying out the smaller sizes, but hopes to be able to do so sometime in the near future. It would be very interesting to compare the patterns of the smaller gauges in chokes and cylinder, with the patterns of the twelve bore, and this information is best obtained by careful target work.

## THE AUTOMATIC PISTOL

THE annual report of the chief of ordnance to the secretary of war for the fiscal year ending June 30, 1909, has recently been released for publication. It covers many subjects of interest to military men and is not without information of great value to civilians who are interested in the development and improvement of small arms. Among other things the report says, "Preliminary reports have been received on the Colt and Savage automatic pistols, caliber .45, issued to the service for test, and instructions have been given to the troops to turn in all these pistols to the different manufacturers for alterations before further tests are made. Colt's double action revolver, caliber .45, model of 1909: Six thousand of these revolvers have been purchased and issue is being made to troops in the Philippine Islands. In view of the fact that the supply of Colt's double action revolvers, caliber .38, is becoming somewhat depleted and of the delay which has been encountered

in furnishing a satisfactory automatic pistol. The purchase of these revolvers was considered advisable." This action on the part of the ordnance department may be interpreted to mean that nothing short of a practically perfect automatic pistol, proved in the test of actual service in the hands of troops, will be accepted to take the place of the .45 caliber revolver. As the same caliber is insisted upon in the two types of side arms, it is evident that considerations other than mere ballistic differences, are the causes of such persistent effort on the part of our ordnance department to perfect an automatic pistol for the several branches of the service. If we were not already familiar with the reasons for making the change from the revolver to the more rapid fire principle it would only be necessary to observe the methods of other nations, to reach the conclusion that greater fire speed is the main incentive to progress and improvement in fire arms intended for use under modern service



conditions. Accuracy and stopping power are properties peculiar to no particular type or make of arm; the former is expected as a matter of course in all first class arms; the latter is determined almost entirely by the nature of the service for which the arm is intended. It is very evident that neither inventors, manufacturers, or ordnance experts share the apprehensions of some of our writers, that the material of which the springs and small working parts are made will not stand up under the suddenly applied strain of rapid automatic functioning. It is only necessary to compare the service exacted of industrial machinery everywhere, more especially that which is light, delicate, and complicated and driven continuously at a high rate of speed, with the extremely limited service required of any type of firearm. It is clear that machinery that is in continuous service must incidentally be subjected to greater strains and tests of endurance than would be imposed on any kind of fire arm in the course of its only occasional fits of industry. For many years there has been an unpublished demand by sportsmen of every class for small arms to handle cheap ammunition, several have been put on the market from time to time, embodying some of the essential features of a sportsman's side arm but generally unsatisfactory by reason of the addition of some feature which might have been the fancy of some one wholly unfamiliar with the requirements of the craft. Early in the history of breech loading firearms adapted to fixed ammunition, attempts were made to supply the people with small bore weapons, but up to date not a single one of all those produced is anything like what is wanted by shooting men of the present time. It is true we have changed somewhat in our ideas but the change was not brought about by the weapons furnished us, but by an intelligent study of the whole question of arms and their use as it appears to those who are sufficiently interested to wish for improvement.



A .22 Caliber four shot pistol made by C. Sharps & Co., Philadelphia. One of the earliest types. The barrel, when unlocked by pressing the stud at forward end of frame, will slide forward for loading; the nose of the hammer revolves with each cocking motion, bringing the firing mechanism opposite each chamber in regular order.

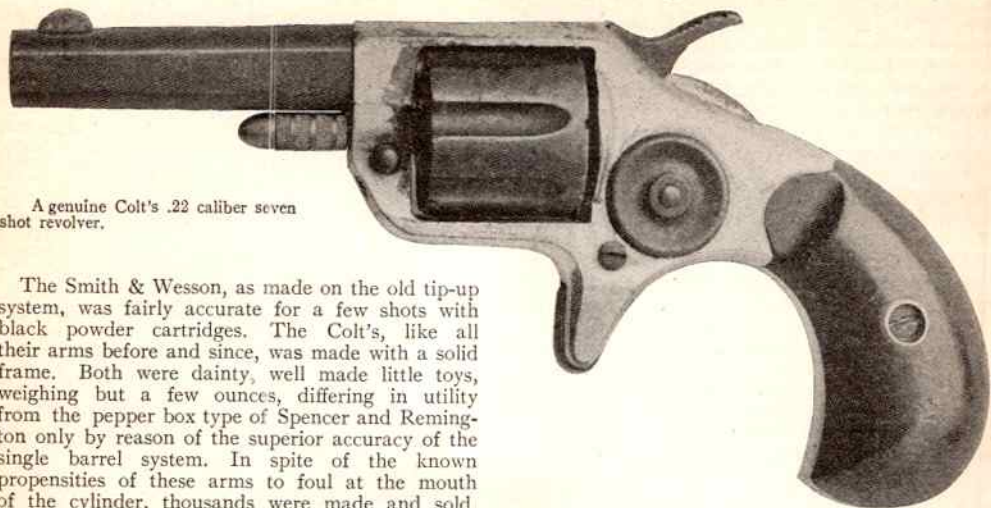
At any time during the past thirty years a good practical .22 caliber repeating pistol would have been welcomed by the public. Several were invented like the Sharps Spencer four-shot and Remington five-shot "pepper boxes." They were rightly named too, as they would rival the latter article in their ability to distribute their contents promiscuously without regard to the marksman's ideas of direction. Indeed, it would be difficult to imagine what class of shooters the manufacturer had in mind as prospective customers for this style of pistols. They were of no practical use as hunting arms, they were useless for offensive and defensive purposes, and to use them as target weapons, or as an auxiliary in training for the heavy calibers of that time, would have been absurd. Notwithstanding the evident uselessness of this style of one-hand guns, they served to show, to a limited degree, the possibilities of the tiny .22 caliber cartridge, which, being noticed by later and more progressive manufacturers, eventually gave us .22 caliber revolvers of Colt and Smith & Wesson make.



Remington .22 Caliber five shot pistol, Elliott's patent, May 29th, 1861. This arm is a double action and like the Sharps, the striker instead of the barrel revolve, it is made on the tip-up system.



A genuine Colt's .22 caliber seven shot revolver.



The Smith & Wesson, as made on the old tip-up system, was fairly accurate for a few shots with black powder cartridges. The Colt's, like all their arms before and since, was made with a solid frame. Both were dainty, well made little toys, weighing but a few ounces, differing in utility from the pepper box type of Spencer and Remington only by reason of the superior accuracy of the single barrel system. In spite of the known propensities of these arms to foul at the mouth of the cylinder, thousands were made and sold. Had the armorers themselves been practical gun users, or had they sought the advice of practical gun men, they would never have made the mistake then, or afterward, of turning out a weapon wholly unsuited to any definite line of service, and too small and light for a target weapon. Following these miniature arms, came another freak weapon known as the "Hunter's Pet." It was neither rifle nor carbine, belt or pocket gun. It was impossible to use it as a single shot pistol on account of its length and excessive muzzle weight, and when the skeleton stock was attached, it was awkward to handle, and fell far short of the requirements of a shoulder gun. A limited number of these mongrel arms were carried by canoeists and trout

hand shooting, their use demonstrated beyond dispute the value of the little .22 cartridge, as first aid to a complete mastery of our larger caliber military and frontier side arms. Most of the world's famous shots used these single shot pistols regularly in matches or exhibitions, and while they were satisfactory for exclusive target work, the practical shooter felt a desire for a weapon that would satisfy that something which the repeating rifle and the six-shooter had awakened in us. We wanted a .22 caliber revolver and in our innocence imagined that it was only necessary to bore the .45 frame for the .22 cartridge. The demand was promptly met by the Colt Company,

A Smith & Wesson .22 caliber seven shot revolver with hinged barrel. This little weapon was made with all the care in fitting and finish for which American pistol makers have long been noted.



fishermen, to pot small game, but in most instances a waiting agreement must be made with the game to insure success, as the "Hunter's Pet" was not remarkable for breaking speed records in getting into action. The "Hunter's Pet" was not designed to fill a natural want or demand of right thinking shooting men and therefore its field was limited from the first. Its reign was short and it died a natural death. Coincident with the "Hunter's Pet" appeared a line of single shot pistols, designed according to models suggested by the old style dueling pistols. They were well made, clean shooting, accurate weapons, and although not wholly practical for every department of one-

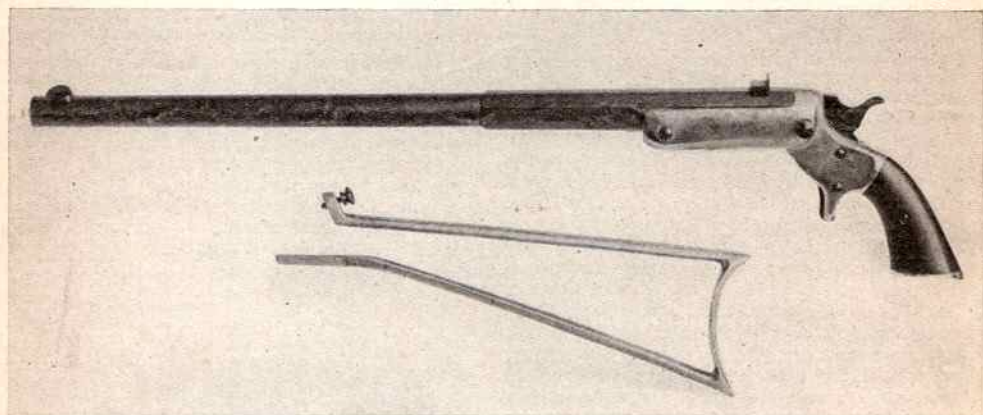
who, for a time, bored their S. A. Army model for the .22 caliber cartridge. The chambers being cylinder bored would take any length of .22 then made but the results obtained were not just what we had anticipated. We had yet to learn that a relative proportion between the caliber



and total weight of the arm must be maintained; that barrels of a certain length are necessary to insure proper combustion; that a cartridge as small as the .22 caliber, while it may work well in a single shot pistol, where there is no escape of gas, cannot be expected to do as well in a revolver that permits a loss of nearly one-fifth of its propelling force, and that a weapon intended for one-hand use may not exceed a certain weight or length without proportionate loss of mobility; nor may good shooting be hoped for from an arm of less weight than is required to ensure steady holding and furnish adequate resistance to the blow of the hammer without causing divergence of the muzzle from the point of aim. In 1902 the Smith & Wesson Company produced a pretty little toy in the shape of a .22 caliber revolver. It had a three and one-half-inch barrel, weighed ten ounces, was exquisitely proportioned to the size of the tiny cartridge, and in finish and workmanship was wholly in keeping with the best

perfect .22 caliber single shot pistol is a most desirable one, but how many of us would cheerfully bear the expense of extended practice with a .38 revolver when as good, or, even better, results might be obtained with the same weapon taking the less expensive .22. After many years experience of a very practical kind with pistols of various makes and calibers, I do not hesitate to say that for a pistol as light as the .22 caliber, and frequent use that would be made of it, the hinged frame with simultaneous and automatic ejection system, possesses many advantages. It is easily and quickly disassembled for cleaning, without the use of tools, and every part exposed to fouling from powder smoke or residuum, is accessible to wiping rod and the brush.

The chambers can be reloaded while the pistol is held in a natural position and the hinged frame will last indefinitely without showing wear or lost motion. It is doubtful if the .22 caliber black powder cartridges can ever be made to work



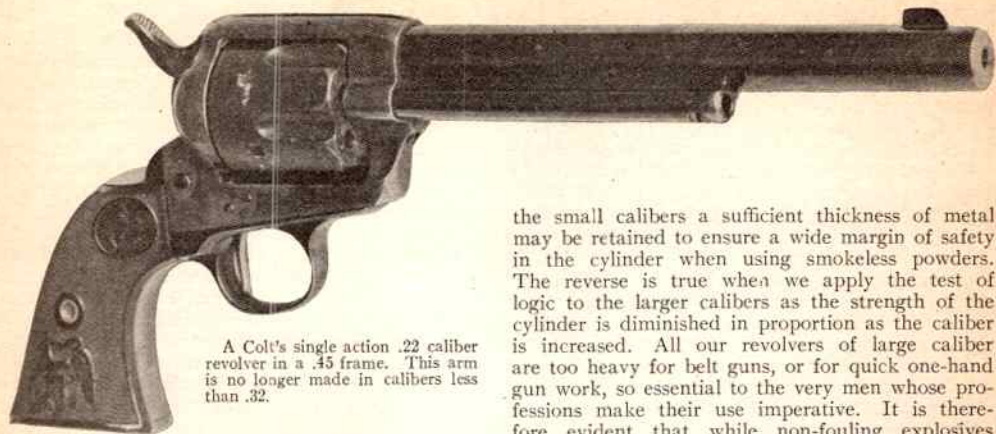
A type of the .22 caliber pistol known as "The Hunter's Pet," an indefinite type, being neither a convenient one nor a good two hand gun.

traditions of the Smith & Wesson Company, long famous for their high standards. Notwithstanding the proved value and excellence of the diminutive cartridge in single shot pistols of proper weight, and the acknowledged mechanical perfection of the little ten-ounce revolver itself, it failed to make good. Had the Smith & Wesson people selected their model 1891 single action .38 caliber frame, as the proper basis upon which to build a .22 caliber revolver, it would have been a long stride toward the ideal pistol for cheap and useful practice. With a cylinder of the same outside diameter as the regular .38, but bored for the .22, it would accommodate eight or more shots. The barrel, if made in five one-half or six-inch length, would have been slightly heavier than the .38, thus providing the muzzle and general weight so essential to accurate and rapid marksmanship. The joint between cylinder and barrel, the only real obstacle to the perfect revolving small bore pistol, should have been made as close as possible, even if it had resulted in the disadvantage of being compelled to use smokeless powder only. The combination of a handy .38 pocket revolver and near

satisfactorily in a revolver, no matter how closely the arm may be built; whether the smokeless cartridges will work in a manner satisfying to critical marksmen is as yet somewhat problematical. Should an automatic pistol be manufactured to handle the .22 caliber cartridges no trouble from fouling or imperfect combustion need be feared as both black and smokeless cartridges have been fully tested and will work in any type of arm that compels all the gases to pass through the muzzle. The revolver type has never been thoroughly tried out with the .22 cartridge and until this is done it would be unfair to condemn it. The illustrations published with this article show the lines along which American armorers have been working. Thus far only the single shot pistols have proved their now undisputed excellence as a one-hand weapon, and this is one of the principal reasons why I have so strongly advocated the development of the automatic type of pistol. We have learned through oft repeated experience with various types of arms, that the single barrel properly breeched up to conserve all the energy developed by the cartridges, is the



## The Outer's Book



A Colt's single action .22 caliber revolver in a .45 frame. This arm is no longer made in calibers less than .32.

only true philosophy of gun building. It is a sound fundamental principle and as such is a proper one to use as a basis upon which to continue the evolution of American small arms. Every truly progressive gun lover should welcome the advent of a .22 caliber practice arm, whether it be of the revolver or automatic type. If the revolver is a success, the demand for it will be unprecedented, and thousands of new shooters will be developed through its use and the demand for the more rapid fire automatic in the same caliber will naturally follow.

Should the revolver in .22 caliber prove impracticable from any cause, the coming of the automatic could not then be much longer delayed, as the demand for a practical arm taking cheap ammunition will not be silenced until satisfied. Among gun men the Colt Company has always been considered approachable and progressive. In response to a strong public sentiment they are now at work on one of their most popular medium weight models with a view to making it a first class .22 caliber revolver. Should they succeed, we may look for something far superior to anything that has yet appeared in that line. Both the Colt and the Smith & Wesson companies have medium weight models which, with slight modifications, and barrels of appropriate length, would make ideal .22 caliber arms. These two firms have done much for American sportsmen but not more than American sportsmen have done for them; therefore, we feel that we have a reciprocal right to make demands within reason, and not prejudicial to good business policy. At present it is the consensus of opinion of those who are in a position to know, that the arm which we are asking for would have a first call sale sufficiently large to reimburse the manufacturers for the outlay necessary to install the new machinery to produce the gun. We need pistols of both types so that our experts may test them side by side. Much might be learned in this way that would be of great value to armorers in their endeavors to perfect their respective types. Outside of the difficulties chargeable to the escape of gas the revolver in light caliber is an arm that appeals to one's sense of beauty and proportion. The principle upon which it is constructed lends itself readily to a symmetrical placing of weight and in

the small calibers a sufficient thickness of metal may be retained to ensure a wide margin of safety in the cylinder when using smokeless powders. The reverse is true when we apply the test of logic to the larger calibers as the strength of the cylinder is diminished in proportion as the caliber is increased. All our revolvers of large caliber are too heavy for belt guns, or for quick one-hand gun work, so essential to the very men whose professions make their use imperative. It is therefore evident that while non-fouling explosives may prolong the life of the revolver in small calibers for many years, it is the automatic pistol with its infinite capacity for enlargement to meet the requirements of military and frontier service, or refinement of outline and calibers, that will adapt it to target and pocket use, that we must eventually direct our efforts for improvement. More than any other type of arm a weapon intended for one-hand use should be designed with a view to mobility in drawing and training the arm on the object of aim; to delivering the first shot with the utmost despatch, to be followed by repeating fire of the highest attainable speed, not limited by lack of developed skill in manipulation on the part of the shooter; and to a magazine system that will permit of sustained fire with the least



A .22 caliber hammerless, one of the type of pistols the sale of which should be prohibited.

interruption. The automatic type of pistol possesses these advantages to a degree not equalled by the revolver or any other type of arm. For these reasons we advocate its study and improvement.

Letters continue to come in great numbers to the Outer's Book from gun men who want the .22 automatic. We cannot publish all of them, but here is one from H. B. Wilson that is very much to the point:

One has only to look through the various sportsmen's magazines to be convinced that pistol and revolver enthusiasts are almost a unit in their demands for a .22 caliber pistol, or a revolver



which contains the good features of and maintains the accuracy which the leading manufacturers have succeeded in imparting to their best weapons of the heavier calibers. Most of the writers favor the automatic pistol in preference to the cylinder type of arms. Mr. Kane, in a late issue of the *Outer's Book*, submitted a model for an automatic pistol which would, in my opinion, be a very symmetrical and nicely balanced weapon. There is no doubt, that automatics have at least two distinct advantages over the pistol of cylinder type. One is the rapidity of fire and the other is the complete conservation of all the energy of the cartridge. The latter, to my mind, constitutes the only and best reason for the automatic. The increased number of shots that can be delivered in a given length of time is of no special value, as anyone who is enthusiastic enough to become a good pistol shot can shoot fast enough with a cylinder arm for all practical purposes. An ideal weapon for the use of sportsmen, in the opinion of the writer, would be a Colt .22 caliber, six-inch barrel, on Colt New Police .32 frame, with a careful alignment of cylinder and barrel to prevent any possible shaving of the bullet, the

cylinder fitted closely reducing the loss of energy to a minimum, equipped with their best target sights. This type of a gun would surely meet the requirements of the most exacting revolver "crank" and furnish a weapon for which the seeker of recreation has long sought. On the other hand the Smith & Wesson people, if they could or would furnish a revolver or automatic pistol containing the splendid qualities as to balance and accuracy that belong to their .22 caliber single shot pistol they will have solved the problem. There is no denying the fact that the Smith & Wesson .22 single shot, eight-inch pistol, is as near perfection in a one-hand gun, with the exception of its single shot, that the most exacting gun critic could ask. Let the good work go on! Keep it up! The revolver and pistol enthusiasts are enlarging their ranks every day. The Outer, The Sportsman and the Camper are all learning the fascination of expert shooting with the pistol and revolver. The present demand for a .22 caliber pistol will be taken up in time by the leading manufacturers and some of them will, no doubt, furnish a weapon that will meet the requirements of the craft.

## SHOTGUN SHOOTING

By CHARLES ASKINS

MR. DEANGELIS seems to be a level-headed fellow, though I disagree with him in toto about snap shooting being the most killing style for general work. I should judge that he is not a wildfowl shot, or he would surely have found reason for altering his conclusions. I shall treat snap shooting versus deliberate swing fully in a chapter of my new book, and hope to prove with diagrams and illustrations that snap shooting is entirely unreliable. His conclusion that swinging, or following, as he calls it, necessitates more lead is exactly the opposite of true. Indeed, in my own work with a shotgun I make but about one-third the allowance for speed that scientific facts would absolutely prove to be needful, and the best market shooter of wildfowl that I have ever known made absolutely no allowance for speed of flight or the time required for the shot to pass to the mark. This is all capable of a logical explanation which I shall attempt to make later. Perhaps I would owe Mr. Stillman an apology if I should intimate that he is antiquated, but his advice to the novice to experiment with reduced loads in the 12, down to a half ounce of shot seems to me to be the worst advice possible. The only possible way to develop skill with such a game as wing shooting is to discover by experimenting with different loads of factory shells until you learn which load

your gun handles the best and then within very narrow limitations stick to that load. I once had a barrel that would do good work only with  $3\frac{1}{4}$  drams of powder and an ounce and a quarter of shot, No. 7. Any other load would prove less effective in this barrel and I used it on all kinds of game. My present upland gun has one barrel bored to fifty per cent and the other 60 per cent. It is most effective with 3 drams of Dupont powder and an ounce and an eighth of  $7\frac{1}{2}$  chilled shot. For this particular gun this load cannot be improved even for duck shooting though I do not use the barrels on duck from choice, or indeed on anything but quail. Strangely enough I find it best to shoot only Winchester shells in this gun and when I change to U. M. C., or other brand, it makes a difference in my shooting of from five to ten per cent, and the change is liable to throw me off, cause a lack of confidence in the load and gun, and utterly upset my work. The man who is forever changing his loads and experimenting with different charges, no matter whether he loads them himself or buys factory ammunition will never be able to perform creditably, never, no matter who he is. The gauge of gun is by no means such a matter of importance either as to its weight, or the ballistic qualities of the cartridges used. A man might easily have too light a gun and swing it faster than his eye and mental



machinery works, or, of course, the opposite might be true. All of these are questions that time, thought, and much care must decide for every individual gunner.

In modern shotgun work this thing of taking a bead on game as Mr. Stillman describes it, is utterly wrong. He never sees the gun not to speak of the bead, and a sight on a shotgun is only placed there in deference to conservatism and the notions that have come down to us from rifle shooting days. A man points his gun at anything upon which his eye and mind is fixed, and he does not do this from instinct, as writers have held, but from long and persistent education in pointing that begins in childhood and lasts through life. The difference in pointing your finger and pointing a gun is that one is done with a single hand and the other with both. It is the action of the two hands in pointing the gun that leads to effective shooting, much more than the fit of the gun stock to shoulder and cheek. Indeed when trap shooting with a heavily loaded gun I never permit my cheek to touch the stock, and in game shooting only press it very lightly at the moment of discharge. Any man who locks his face to the comb of a gun when anticipating a shot is very badly handicapped indeed for he not only has to move the gun but needs to move his head, and the neck muscles in shooting move very stiffly since they become tense under the excitement and not only is correct and easy vision interfered with but the piece is liable to be moved with jerks. Then too, the effect of recoil on the gunner is immensely greater.

The length of the gunstock is important for two reasons; it must be short enough not to balk you and long enough to insure the shoulder taking its share of the recoil, and it must be straight enough to keep the barrels down out of your way where they will not interfere with the vision. I find too that there is a good deal of humbug about being obliged to have the drop of a stock just so. In my own personal experience I have learned that I can shoot any gun with any length or drop of stock, and indeed I believe that if it had no stock on it I could shoot it about as well, though, of course, it could not be done with any comfort. I find, however, that while I can point straight from anywhere about the level of the shoulders, yet when I attempt to lower the piece beneath the shoulder or beneath the level on which a man would naturally point his hand that I cannot do anything, and therefore I am rather skeptical about this shooting from the hip business. I have never seen it done and never expect to.

Here are the dimensions of a gun that I have ordered from Cashmore. It would not please everybody, but I think it will suit me. I ordered a foreign made gun, not because I like them better, but for the reason that I am writing a good deal of shotguns and do not wish any one to say that

he writes favorably of this or that action because he owns that particular make of arm.

This new gun of mine is a 16 gauge and is intended primarily for upland shooting. It has 32-inch barrels and weighs 7½ pounds. The right barrel is modified to 60 per cent and the left is full choked. The barrels are of Whiworth steel and have file cut in place of engine turned rib. The action has quadruple fastening or locking bolts, two bolts through the lugs under the barrels, a square bolt through the extension rib, and Purdey side-clips. The piece is self-ejecting and has single trigger with a pull of three and a half pounds on either lock. The frame is of the box lock type though Cashmore makes either box locks or side locks as the gunner may prefer. The engraving contains little scroll work but consists of simple game scenes in modest framing. The stock is 14½ inches long with a drop of 2½ inches at butt and 1½ at comb, with a cast off of ¼ inch at the comb. The stock is to be of the darkest natural walnut obtainable. The load of this gun is particularly my own. It is to be chambered for a long shell and will shoot 3 drams of nitro powder and an ounce and a sixteenth of number 7 shot. My idea was that this load would give me two hundred feet greater muzzle velocity than the standard sixteen gauge load. Of course it will give a high breech pressure and hence the extra weight of the gun and especially have the barrels been made long and heavy so as to derive the full benefit from the increased powder charge. I have never believed in short, light barrels for heavy work or for the matter of that any kind of work. I expect this new Cashmore gun to be the most deadly and effective of any that I have ever shot. Mr. Cashmore guarantees that he will make a gun that will not lead the barrels even with this high velocity charge and I am much interested in learning whether he can do it or not. Contrary to most theorists and even the manufacturers I have never had much faith in guns with short barrels where heavy charges were to be used and my Parker 28 had thirty-inch barrels and the gun weighed 6½ pounds. I used in it very effectively the 20 gauge standard load of 2½ drams of Dupont powder and ¾ of an ounce of shot. In this last gun I have experimented with still heavier loads up to 2½ drams of powder and one ounce of shot but found that the shells would not stand the strain of such extreme loads. I never used any other shell in this gun than one of 2½ inches.

In the Cashmore 16 I shall use the load for which the gun is regulated for all game unless possibly snipe when I may reduce the size of the shot to 7½.

I believe this business of reducing the size of shot has gone far enough. I have tried nine and ten shot at quail and snipe but never could see that the small pellets were so effective as eights. Small shot will kill to be sure at short range, but the wind affects them too much and they lose velocity very rapidly, even at moderate ranges.



# A NEW SELF-LOADING RIFLE

IN announcing the advent of their New Model 1910 High Power Self-Loading Rifle, the Winchester Repeating Arms Company did not abandon the well known policy of conservative advertising, for which they have long been noted, yet they gained the attention of the shooting public by ushering in the New Year with a "Thriller." It was not the modest circular bearing the mere announcement of the birth of a new arm, that made gun lovers throughout the country sit up and take notice. It was the Name, the Time, and the Gun. With all the great nations of the world striving hysterically to be first in the field with a successful automatic rifle adapted to military service, and riflemen everywhere with ear to the ground straining to catch the first rumor of something new in guns, it was certainly the "psychological moment" for a reputable firm to herald the birth of a new and powerful sporting arm of the self-loading type. Since 1903, when the Winchester Company placed their little marvel, The .22 Automatic in the hands of American riflemen, that progressive firm has been working to produce a line of reliable self-loading rifles to cover the entire field of practical rifle work. The .22 Automatic is admirably adapted to every use to which any arm of that caliber could properly be applied. The model 1905 Self-Loader in .32 and .35 caliber is an ideal arm for light hunting and medium range shooting. One could conceive of no better or more convenient arms for general use in the rural districts, or for trick and snap shooting, than the two models just mentioned.

The model 1907 caliber .351 lifts us at once into the domain of the big game hunter. It has a speed of fire unequalled by any other small arm, and reliability of function not surpassed by hand guns of any type or principle. This beautiful little weapon has made an enviable reputation for itself among the hardy practical deer hunters of the Northwest.

The New Model 1910 Self-Loading Winchester which comes to us with a time tried and proven mechanical principle and the prestige of a great name, has all the good points of former models and some very striking and original features of its own. *All the working parts throughout, and the receiver, guard and barrel are made of nickel-steel, which gives them the necessary strength and elasticity to withstand the strain of such a powerful cartridge without increasing their weight and size.* The caliber of the new arm is .401. It shoots a heavier bullet and hits a harder blow than any other recoil-operated rifle made. It handles equally well without change or readjustment, cartridges loaded with either 200 or 250 grain bullets. The 200 grain bullet fired from the new .401 rifle develops greater muzzle velocity and muzzle energy than the 30 U. S. Army cartridge which, since it was first adapted to the model 1895 Winchester rifle has hammered its way into the affections of big game hunters everywhere. Despite the fact that the .401 caliber cartridge with the 250 grain bullet develops somewhat less striking energy than the cartridge with the 200 grain bullet, it hits a much heavier blow than the bullet handled by any other recoil-operated rifle. Some idea of the stopping power

of the .401 caliber is given by the accompanying illustrations. They show how a soft pointed bullet of this caliber mushrooms to four times its original size upon impact with animal tissue, and the size hole which one of these bullets will make in a steel plate. The knock down, shocking power of either of the .401 caliber cartridges with their heavy bullets of large diameter, driven with high velocity, is tremendous, and the combination of such power with the rapidity of fire which the Winchester Self-loading system permits makes the *Model 1910 rifle unusually desirable for hunting the biggest of game. There is no rifle made which equals the Model 1910 for delivering five as powerful blows in as few seconds.* In the days of the old west, the .45-70 was the chosen arm of the intrepid frontiersmen who with it, met and vanquished the great grizzly bear and the ponderous buffalo; and in later days the .30 U. S. army was selected by those wishing a cartridge of proved energy and stopping power. Compared with these the new .401 cartridge looks small in bulk; it is only half as large, but when it comes to hitting a knock down blow, or tearing a great disabling hole in tough animal tissue it easily distances the two larger and less modern cartridges. *The .401 Caliber Rifle with its Rimless Shell, Nickel Steel Receiver, Barrel and working parts, reduced bulk and enormous power, and marvelous fire speed represents the Winchester Idea in Modern Gun Building.* Through the vast experience acquired in many years of rifle and ammunition making, the Winchester Company was enabled to anticipate the effect of modern smokeless powder on the gun maker's craft. They at once demanded a dense smokeless powder giving great velocity without generating excessive chamber pressure and permitting a reduction of bulk in both shell and mechanisms that amounts to a revolution in gun making. In the Model 1910 American hunters are offered a rifle of carbine dimensions, taking a pistol sized cartridge but supplying velocity, energy and stopping power surpassing the ballistic performance of the latest and best known hunting and military arms. One of the features of the Model 1910 that will appeal to the big game hunter is its convenient length: Being but 38 inches over all it is a perfect saddle gun that can be readily withdrawn from the boot and quickly gotten into action. For the same reason it is adapted to mountain climbing and hunting in jungles or dense cover. Being a two-part, take-down it can be packed in half its length and there are no loose parts to drop out and get lost.

When the rifle is taken down for cleaning or packing, every detail of lock mechanism and action is easily accessible. No tools are required to take the arm apart or put it together. The whole process is as simple as jointing a two-piece fishing rod. The barrel being rigidly screwed into the receiver is stationary and the sights are fastened directly to it, thus ensuring permanent accuracy. *The Winchester Self-Loading system is safe, strong, positive in action and absurdly simple.* The working parts are few in number and proportioned to the service required of them. All the important springs employed in the construction of this type of arm are of the



spiral pattern which, owing to the uniform distribution of strain are practicably unbreakable. A note-worthy feature of the new arm is the receiver. Milled from a single block of solid nickel steel it is singularly beautiful in outline and entirely free from sharp corners, projecting angles, or inequalities of surface which might catch in loose clothing, entangling undergrowth or hinder withdrawal from the saddle boot. All the working and moving

the magazines may be quickly changed with either hand without for an instant losing sight of the charging or fleeing game. This advantageous feature found only in Winchester recoil operated rifles, is thoroughly appreciated and strongly endorsed by many experienced hunters of elusive or dangerous game. The standard Model 1910 rifle has a beautifully modeled stock with a pistol grip properly placed, and hard rubber butt plate. The standard



THE NEW MODEL 1910 SELF-LOADING WINCHESTER

parts are enclosed within the walls of the receiver. Not even a screw head or the end of a friction pin being visible to work loose or mar its smooth, beautifully finished exterior. A feature of the Winchester self-loading system that will be appreciated by gun users is the solid breech. The receiver has no openings to the rear through which powder gases, dirt, oil or fragments of defective primers might blow back into the face of the marksman. The design of the receiver places a solid wall of nickel steel between the shooter and the breech closure, thus eliminating all possibility of accident. The Model 1910 rifle, like the earlier models of the same type, is loaded by the recoil of the exploded cartridge, which ejects the empty shell, cocks the hammer and carries a loaded shell from the magazine into the chamber. This places the complete control of the rifle under the trigger finger and makes it unnecessary to take the eye off the sights when shooting rapidly, and while hunting in dense cover one may continue to shoot without losing sight of the game. The detachable magazine is a most desirable feature. This style of magazine, not only makes it unnecessary to work the unused cartridge through the action when unloading, but it permits the use of extra magazines

stock finished with a rubber butt plate, is 13½ inches long and has a drop of 1¼ inches at the comb and 2¼ at the heel. The tang is drilled so that the Lyman rear combination peep sight may be easily applied, thus giving the marksman a long, clean level sighting plane.

A neat, positive and noiseless trigger lock is conveniently located in the guard, within easy reach of the trigger finger so that the rifle may be carried with chamber loaded and hammer at full cock, with perfect safety up to the instant of firing.

That the big game hunters among our readers may more fully realize the tremendous stopping and killing power of new self-loading Winchester, we publish herewith the ballistic data of the four favorite hunting cartridges, new and old, for the purpose of intelligent comparison. The .401 Self-Loading rifle cartridge with 200 grain soft point bullet has a velocity at the muzzle of 2142 foot seconds, energy at the muzzle, 2038 foot pounds. .401 self-loading cartridge with 250 grain soft point bullet, velocity at muzzle, 1875 foot pounds; energy at muzzle, 1952 foot pounds. .30 U. S. Army cartridge, 220 grain soft point bullet, velocity at muzzle, 2000 foot seconds; energy at muzzle, 1964 foot pounds. .45-70-405 grain soft point bullet,



THE NEW RIFLE TAKEN DOWN

by means of which a large number of shots can be fired with great rapidity. The detachable magazine of the Model 1910 rifle handling, as it does, cartridges of two different weights, allows the substitution of one cartridge for the other easily and quickly. As extra magazines, loaded, weigh but little, several may be carried in the pocket without inconvenience and whether in daylight or darkness

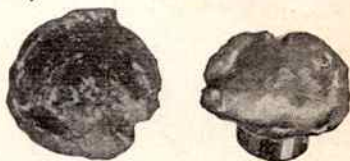
velocity at muzzle, 1361 foot seconds; energy at muzzle, 1661 foot pounds. This great increase in velocity and energy which to the big game hunter means paralyzing knock down force and killing power, is obtained by scientific methods in modern gun building. In former years, if more power or greater range in arms was desired, the unvarying nature of explosives then in use compelled the



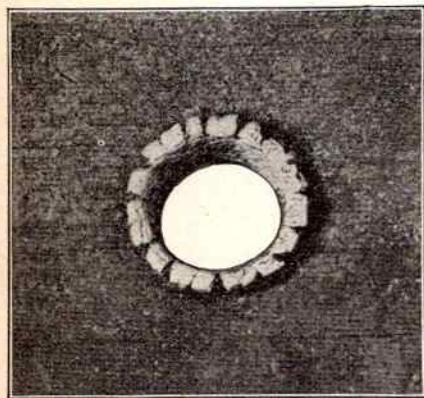
enlargement of shell, bore, bullet and the gun. *The Winchester Idea*, as exemplified in their Self-Loading system makes it possible to design and build arms of graceful and pleasing outline and of such weight and dimensions as the cumulative experience of armorers and gun-users has shown to be correct and best adapted for each department of rifle shooting. It is no longer necessary to enlarge the gun and increase its weight, or make concessions to exaggerated chamber space when a slight increase of power is desired. The powder used in the Winchester Self-Loading arms requires less than half the chamber area needed to develop the same velocity and muzzle energy in the older types. Many people not familiar with the recoil operated system of fire arms, are under the impression that there is a loss of energy to the bullet equal to the force required to operate the mechanism; that this is fallacy has been proved by firing the

absolutely and positively self-functioned, thus the hunter's safety does not depend in any degree on the doubtful skill in manipulation, of an untaught or excited hunter. Everything points to the self-loading type as the arm of the future.

What the mechanical details of that arm will be, is at present problematical. It is, however, safe to hazard the prediction, that the Winchester Idea will eventually dominate the entire field of invention and production. The use of nickel steel in the receiver and working parts of a rifle is original with the Winchester Company and is an innovation that will be far reaching in its effect on the manufacturers of small arms. This in connection with the greatly reduced chamber area means that our



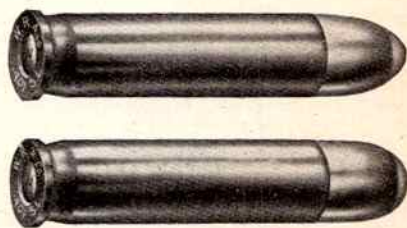
Front and side views of a mushroomed bullet, actual size



Hole, actual size made in a steel plate by a .401 caliber bullet

shooting and military rifles as well as our one-hand guns, will be modified in bulk and reduced in weight commensurate with the service required of them, without sacrificing any of the structural strength which is so essential in modern small arms. There are certain mechanical features in gun building that are traditional and which may not wisely be disregarded. One of these is the rigid barrel which is *peculiar to the Winchester system of self-loading only*. The Model 1910 high power rifle from butt to muzzle is as rigid and staunch as the time honored Sharps musket. All small arms of the future intended for the severe and exacting tests of military service, or the big game trail, must neces-

self-loading ammunition from single shot rifles with solid breech block; these exhaustive tests proved conclusively that the self-loading arms gave velocity, energy and penetration equal to the single shot rifle. For several months the relative merits of bolt and lever action rifles have been warmly and eloquently discussed in the various sportsmen's journals, by earnest and able writers. It is safe to say that no subject of such vital interest to the shooting fraternity was ever more ably handled. Among other things it was shown that speed of fire was undoubtedly the greatest incentive to invention and improvement in fire arms. Whole columns were printed to make clear the fact that the lever action requires two motions less to manipulate than the bolt action and is therefore a more desirable weapon in dire emergency. It was also shown during the debate, that with either type of action a certain degree of individual skill must be acquired before they can be manipulated to the best advantage; without this there is little, if any, difference in the fire speed of either arm in the hands of a novice. The bolt vs. the lever action debate developed the fact that most of the trouble from jamming, and cartridges blocking the actions of the various rifles under discussion, was caused by ignorance and imperfect manipulation on the part of the operator. With the Winchester Model 1910, trouble of this nature cannot occur. The arm is



The 200 gr. (upper) and 250 gr. (lower) soft point bullets

sarily embody the fundamental features of gun building as perpetuated in the Winchester Model 1910 Self-Loader. Modern hunters are usually students as well as users of fire arms. Their weapons must be designed according to correct mechanical principles. They must be constructed of the best material to ensure strength with compactness and symmetrical proportions without structural weakness. They must combine tremendous shocking power with high velocity and unquestioned accuracy; they must be capable of extremely rapid and sustained fire; the mechanism must be safe, simple and accessible possessing a reliability of function that may not be challenged.

The Winchester Model 1910 Self-Loading rifle combines these essentials to a degree not equalled or approached by any other make of arm.

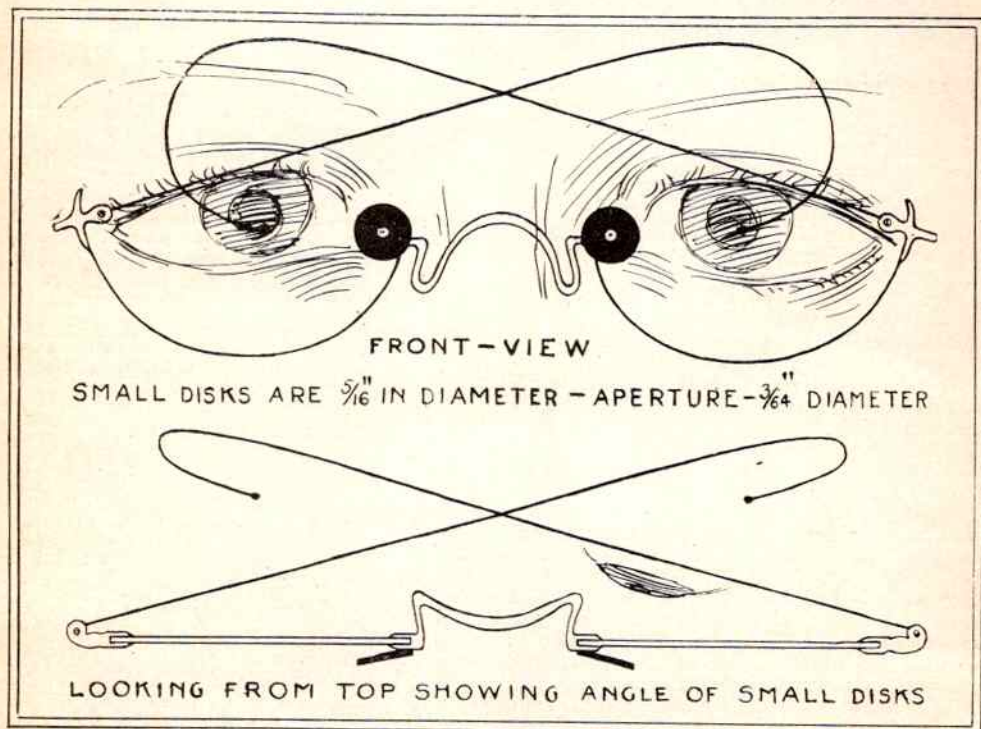


# HOME-MADE SHOOTING GLASSES

By ARTHUR E. TOLL

IN reading the January issue of the Outer's Book, I was interested in the article by Mr. Charles Newton, describing the exact principles involved in the effect of yellow glass as used in rifle shooting glasses. I have been interested in shooting glasses since it was always difficult for me to draw a clear and sharp bead in open sights as used on most rifles. The trouble of drawing a very accurate and sharp bead on a target, and that of clearly defining the rear open sights seems to be very common among riflemen. Some have never known what it is to draw a well defined set of sights on a target. I have devised a pair of shooting glasses of my own design which I have tried under various conditions of light, etc., and have found them to be the proper arrangement to use in clearing up blurred open sights or astigmatism, etc. The illustration shows the shape and positions of the disks, the angle of disks, etc., very plainly; the shooting glasses can be made by any rifleman handy with ordinary tools, but the best article no doubt could be made by an optician. The illustration shows the exact shape of the pair which I have used. They can, however, be made from the frame of an ordinary pair of steel framed spectacles by making two small disks of a size as per diagram and soldering same with hard solder to the point where the rim of spectacles is fastened to the bridge, after glasses have been removed.

The shape of my glasses seems rather strange and awkward, but by trying various different styles this seems to be the best suited for the purpose intended. So you will notice the top rim is entirely eliminated in my glasses, which is done because there is no glass for it to hold, and by removing same it gives the rifleman an unobstructed view forward. In the top view the ends are shown bent to the back, which, with the deep bend of the lower rim, does not interfere with the sight when not looking through the aperture. The disks are placed at the angle shown so that the increased size of the aperture circle, which will appear the same as a "Lyman" peep sight, shall take the form of a perfect circle, which would not be the case if the line of sight through opening were at a sharp angle to the disks. The glasses seem quite unnatural but they accomplish the purpose. The disks being so close to the bridge of the nose, are entirely out of the line of sight when the person is looking ahead, which is clearly seen by looking at the illustration, but when one eye is closed to sight along the barrel of the rifle the aperture falls naturally in line between the pupil of the eye and the line of sight. The principle is very simple, as every one knows the principle of the peep sights and the pin hole camera. The surface of the disks and adjoining surfaces of the frame should be covered with a dull black paint, the kind used by





manufacturers and opticians in painting the inside surfaces of telescopes and field glasses and care should be taken that the rim of the aperture be covered with the same so that there shall be no glaring surface between the eye and the sights. It is well to dust lamp black over painted surface before it is dry, which will materially assist in producing a dull non-reflecting surface. I have accomplished this effect without the use of paint by simply holding the side of disks which come nearest the eye in the dense smoke of a pine chip, holding same far enough away from the disk so

that the heat of the flame would not melt the solder, thereby loosening the disks. It is absolutely necessary that there shall be no bright spots on the rear sight of disks or around aperture or any glossy surface on paint. The aperture must not be made too large, the size given having given very satisfactory results. The disks can be made of brass or other material having a thickness of one-thirty-second inch. The aperture must be in the center of disks. Looking through a pair of these glasses makes the open sights appear wonderfully clear.

## ANSWERS TO CORRESPONDENTS

### THE SPRINGFIELD'S FINISH

GUN AND AMMUNITION EDITOR: I am considering the purchase of a New Springfield rifle, but have heard so many reports of bad finish in the barrel that I am doubtful. Is it possible to polish up these barrels after buying them? If so, how should it be done?

I have a Savage Model 1903 repeater, in the stock of which I wish to form a cheek piece. Would not this increase the speed with which it could be handled? Where could I have this done?

Is it safe to leave Marble's Nitro-Solvent oil in the barrel of a fine rifle? It cuts out fouling so quickly that I am afraid to leave it in a barrel.

If you can answer these questions I will be very thankful. I think the Outer's Book is the greatest going, except that I believe it could be improved by more gun talk, and less stories about other people's hunts. We can get those anywhere, and would rather get wise as to how to have successful hunts ourselves. Yours very truly,

J. P. DAWSON.

[I do not think you should hesitate to purchase a New Springfield on account of unfavorable reports of the interior finish. The arms now being made at the national arsenal are better than ever before, and the working parts receive extra attention. For a slight additional cost you can have the barrel calibrated and probably polished. I would not consider it wise for you to attempt the job yourself unless you have had previous experience in that line. It is a simple operation for a good gunsmith but an inexperienced workman would be liable to do more harm than good. Any local gunsmith should be able to apply a cheek piece to your Model 1903 Savage repeater; it can also be done at the factory at a cost of six dollars. It is not a difficult job and if you are familiar with tools it would be a pleasant and profitable pastime to while away a few winter evenings.

The object of a cheek piece is to furnish an unvarying point of contact for the cheek while shooting, that will place the line of sight directly above the center of the bore. If the stock is too thin, the line of sight will be to the left, if too thick, to the right of the center of the bore. Any appliance that will aid in taking position for quick, accurate aim should increase the speed of handling.

While Marble's Nitro Solvent Oil does take prompt effect upon metal fouling and especially

on nitro powder residue it will not attack the steel of the barrel under any conditions. It contains no acid or anything else that would in any way injure the steel of the barrel. If your gun is not very thoroughly cleaned with Marble's Nitro Solvent Oil, after a few days you may notice that the bore is covered with a yellow or brown substance which you may think is rust. It is not rust but is merely a result of the continued action of the Nitro Solvent oil on the chemicals in the powder residue which have penetrated the steel. This substance is harmless for after the solvent has been applied the acid is entirely neutralized.

We are gratified to learn that you are pleased with the Outer's Book and that if more gun talk is what you most desire, the coming numbers will be all that you could wish for.—R. A. K.]

### AUTOMATIC JAMMING

EDITOR GUN DEPARTMENT: Having read, with much pleasure, your articles in the Outer's Book, on the Automatic Pistol, I take the liberty of writing to you on the subject. I have had Luger, Savage and Colt automatics, the latter make in all calibers from .25 to .38 inclusive, and have had very few jams except with the first Colt .32, which I got shortly after they were first placed on the market. That gun jammed with soft-point ammunition, but since that time I have used full jacketed bullets, with much better results. In spite of the few chances for jamming, however, I cannot feel the same confidence in the automatic as a weapon for use in dangerous service, as I do in the Smith & Wesson or Colt revolvers, and I wish you would tell me whether you think the automatic is or will ever be as absolutely reliable. Is it not a fact that, owing to the variable ammunition, the automatic arms must always be expected to jam whenever the loading machine has failed to put the proper quantity of powder in the shell, or the powder gets too old? In this connection I use the word "jam" to express all the failures to function, whether caused by a real jam, or by failure to eject the empty shell. I would much prefer an automatic, owing to the fact that one can have a serviceable caliber in smaller compass than with the revolver, but I cannot feel as secure with it.



Hoping for a personal reply, for which I enclose stamped envelope, I beg to remain, Yours very truly,  
E. K. HARRIS.

[I am pleased to learn that you are kindly disposed toward the automatic type of pistol. Viewing the situation logically and from the viewpoint of a practical gun man, I feel justified in saying that I believe the automatic types of both shoulder and one-hand arms will eventually supercede all others. At present the revolver type if slower to manipulate, is slightly more positive than the self-functioned arm. However, the fire speed of the revolver depends largely on the skill of the individual marksman while with the automatic no special training in manipulation is required. It is only necessary to catch the aim and press the trigger. In case of a jam with the automatic, which happens sometimes, though rarely with the more recent output, I doubt if the fire speed is checked for a longer period than it usually takes a novice to cock and fire a revolver. I have implicit faith in the future of the automatic pistol. The same skill and intelligence that brought the American revolver to its present mechanically perfect condition, will do the same for the automatic. In mechanical principle the automatic pistol is infinitely superior to the revolver. In compactness of bulk, speed of delivery and sustained fire the automatic has many points of advantage. I am of the opinion that while the automatic pistol does jam occasionally, its failings in that direction have been somewhat exaggerated. We are all inclined to accept the faults of an old established type of arm as a matter of course while we criticise the new types unsparingly.

During many years of experience with various makes of revolvers I have, after three or four shots, had been fired, sometimes found it necessary to use both hands to actuate the cylinder. The shells would occasionally expand and set back against the cartridge stop so tightly that the leverage of the hammer unaided, would not function the arm. Trouble of this nature and from fouling at the mouth of the cylinder has been encountered by me much more frequently than jamming or failure of the automatic to function. I do not think that variations of powder charge or deterioration from age is responsible for the automatic's failures to any great extent. Basing my statement on personal experience and study I would say that most of the trouble is caused by lack of something to guide the cartridge squarely into the chamber after the bolt has stripped it from the clip. You have noticed that most of the jams are caused by the soft blunt nose of the bullet catching against the sharp edge of the chamber. This does not occur when the full mantle bullet is used.

I have a .38 Colt Pocket Model which has been in use for about five years; it has failed me three times while using soft nosed bullets but never while using full mantle bullets. I have in my possession a .38 Military Colt automatic with a six-inch barrel, owned by a friend who carried it in the Southwest for six years; it has been fired 2200 times, 2000 rounds of soft nose and 200 of full mantle bullets. The owner, who is a life long friend of mine, assures me that it has never jammed once, never broke down, and never cost a cent for repairs. This is a splendid record and one which

would be creditable to the best makes of revolving pistols of any caliber. I do not think that auto-pistols must always be expected to jam. I confidently expect to see them made as perfect as our industrial machinery which, although subjected to far more exacting tests of speed and endurance is well nigh perfect.

As you have stated in your letter, one can have a serviceable caliber in much smaller compass in the automatic type than in the revolver. This, however, is but one of the many reasons why the auto-loader is the more desirable arm. The fact that no special training is required to manipulate the automatic, or develop its maximum speed of fire is a strong recommendation. The possibility of loading one's weapon with either hand with equal facility in darkness or daylight, is a point that will appeal strongly to those whose profession compels the constant use of small arms. There are numerous other points of superiority which you doubtless have noticed, which are of themselves sufficient reason why the automatic will be the hand gun of the future. For your information I will say that we expect to publish some very interesting matter on the subject of automatic in the near future.—R. A. K.]

### RIFLE FOULING

EDITOR GUN DEPARTMENT: I am owner of a Savage Model 1903, .22 caliber rifle, chambered for the long rifle cartridge. For some months I have noticed that in one corner of each of the riflings there is a fouling which begins at the chamber of this rifle and follows the rifling for several inches and diminishes as it nears the muzzle. This fouling seems to be as hard as flint and heretofore I have been unable to remove it. Will you kindly inform me in your columns what the cause of this is? Also, can it be removed without sending it to a gunsmith, and if so, how? So far as I can tell this doesn't affect the shooting qualities in the least, but I am afraid it will do so in time. I hardly think it could be due to negligence, as, on the whole, I have taken unusual care of the rifle, for I think it is the finest arm of that caliber I have ever used. I use short cartridges almost entirely and never anything but smokeless powder.

Yours truly, J. S. H.

[The fouling in your Savage .22 caliber rifle may be caused by using the .22 short cartridge in a barrel chambered for the .22 long cartridge. I do not think the fouling would have taken place had you used the long rifle cartridge exclusively. When the short cartridge is used in a long chamber the fouling lodges against the shoulder of the chamber and accumulates there. This fouling is composed of burnt powder residue and lead. With continued shooting, it becomes as hard as enamel and is sometimes extremely difficult to remove. As there is great danger of the rifle rusting under this deposit, it should be removed as quickly as possible. It is possible that there is a burr on the edge of the lands; if so it would also cause fouling at the point mentioned. If the fouling is caused by leading it can be removed by corking the barrel, filling it with mercury and allowing it to stand over night; after which pour it out and wipe carefully. Marble's Solvent Oil used with brass scratch brush will remove it quickly. Hot water



is also a good solvent but in using it care should be taken to prevent it getting into the action. If you have been using smokeless cartridges exclusively the accumulation is undoubtedly caused by leading. The obstruction may also be removed by using a narrow strip of wire gauze doubled over the end of the wiping rod with a thickness of cloth sufficient to make it fit snugly; this should be used in connection with oil as with the scratch brush. It will require some work but the treatment is usually successful and it will not be necessary to send your rifle to a gunsmith.—R. A. K.]

### MR. TOPPERWEIN'S RABBIT

EDITOR GUN DEPARTMENT: The performances of highly skilled riflemen like Mr. Topperwein always interest and sometimes amaze me. I am often inclined to analyze their fine work from what I should to persuade myself is a scientific standpoint.

I recently read in Outer's Book of Mr. Topperwein's feat of killing a running jack rabbit with a .22 short rifle at three hundred and fifty yards. Such performances may be every day occurrences with him, but the average rifleman can hardly hope to accomplish such shooting with anything like regularity.

A short analysis will indicate the true nature of such supreme skill with the tiny rifle and cartridge. The .22 short should have perhaps a mean velocity of six hundred feet a second over this course. Three hundred and fifty yards is one thousand and fifty feet, and we will say it takes the bullet one and three-fourths seconds to get there, for it is not traveling in a straight but a curved line. If the jack were running at all he ought to negotiate forty-five feet to the second, which would make it necessary to hold 78 feet ahead of him in order to score a kill. Then according to our scientific friend, Mr. Crossman, the bullet would have a fall of about fifty feet. Hence we see that in order to score the rifleman must hold fifty feet above and seventy-eight feet in advance of the rabbit. I doubt if it would be easy at a thousand feet to pick out the right spot up in the air so high and so far in advance of the game. Then if any kind of a decent Texas wind was blowing it might be needful to make anywhere from ten to thirty feet allowance for that. Of course a rifleman of Mr. Topperwein's skill could easily make such allowance, but the wind might change before the bullet reached the jack. Moreover, this reminds me that the jack rabbit might get tired of running a straight course in less than two seconds time. The limitations of a .22 short cartridge at the distance too, must not be left out of the reckoning. My authority states that a .22 short at a distance of a thousand feet, not taking into account the effect of the wind, could not be expected to do better than shoot into a six-foot circle. There is a lot of room in a six-foot circle not occupied by one jack rabbit. I should, therefore, be inclined to conclude that with perfect holding fifty feet above and seventy-eight feet in advance, with the force of the wind calculated to an inch, granted that the rabbit would keep running straight along, the chances would yet be fifty to one in favor of the rabbit, owing to the limitations of that cartridge at the distance. Then, too, if the rabbit were hit with that tiny bullet at the distance the chances are ten to one that he wouldn't be killed on the spot, and this must be reckoned

with also when taking into consideration the skill requisite for such shooting.

It should not be forgotten either that it would take accurate judging of distance to put that rabbit out of business even if he were sitting still. As a rough guess I should say that if the rifleman failed more than fifteen feet in his estimate of the correct distance, a miss was certain. Not every man can estimate distances of three hundred and fifty yards so closely. All of which indicates the phenomenal skill of modern "small bore" riflemen.

Before the average, ordinary rifleman could hope to stop that rabbit he would have to have a lot of practice at shooting jack rabbits running at three hundred and fifty yards so as to know where to hold, would have to be able to see the rabbit, would have to have a gun that shot ten thousand .22 shorts at a clatter, and then I should bet on the rabbit. CHAS. ASKINS.

### A MATTER OF TIME

EDITOR GUN DEPARTMENT: On page 57 of the January issue of the Outer's Book a new idea in automatic pistols is described that surely sounds to me like the real goods, and if such a gun is to be brought out and not ditched as the Haines model was, I want two of the larger calibers, and one of the .22 calibers, provided each gun does not cost over \$30. I believe the model under discussion will have all of the good points and none of the bad ones of our present automatics. Please put my order on file and let me know in some future number of the Outer's Book just what chance there is of such a gun being put on the market. I am not the only one in this vicinity who is looking for automatic pistols of the kind described. Wishing the Outer's Book a prosperous New Year, I am, W. L. BAUGHMAN.

[We have no means of knowing when the manufacturers will feel justified in responding to the demand for an automatic .22. To install the machinery for the making of the new pistol would no doubt, necessitate the expenditure of a large sum of money and the manufacturers cannot be blamed for hesitating until it is certain that there will be ready sale for the new gun. We can only hope that the demand will be so strong that they will speedily see their way clear to respond.—R. A. K.]

### THE COLT NEW SERVICE

EDITOR GUN DEPARTMENT: As a reader of Outer's Book I enjoy reading the Gun and Ammunition Department very much. I do not pose as a professional sportsman, nor as an authority on fire-arms, but I have been a consistent lover of them all of my life, therefore I have a few. At the head of the list is a Colt New Service D. A. .44 caliber, 7½-inch barrel revolver, the finest revolver on the market today, as every one who has one will testify. Next in line is a Harrington & Richardson Premier .22 caliber, 3-inch barrel, revolver, a splendid side arm on a hunting trip; and a Hopkins & Allen IXL .32 caliber, 2½-inch barrel revolver. In the rifle line I have a Stevens Crack Shot .22 caliber, 20-inch barrel. I also have a Columbia Special, 30-inch single barrel hammer shotgun; and last but not least a Parker 26-inch double barrel hammer shotgun, a very fine weapon. Now I would like to ask you a few questions. Will the Colt New



Service .44 caliber revolver take .44 W. C. F. black, smokeless or high velocity cartridges like enclosed cut? Can the same revolver be fitted with target sights and extension stock? If so, kindly advise me where I can purchase them. Yours very truly,  
W. J. E.

[You are entirely justified in placing the .44 Colt new service at the head of your favorites. It is a superb weapon. It is regularly chambered for the following cartridges: .38-40-180 and .44-40-200. These are the cartridges used in Winchester, Marlin and other rifles. The new service Colt revolver is also made to take the .44-23-246 Russian Full, midrange or gallery loads. The cut of cartridge which you enclose is the regular .44-40-200 W. C. F. cartridge. If your N. S. is chambered for that cartridge it will take no other. It is very accurate and for hunting purposes is superior to the .44 Russian, on account of the greater speed and lower trajectory. All of the Colt arms are fully guaranteed for use with smokeless as well as black powders in standard factory loaded ammunition. The N. S. Target model is fitted with target sights at the factory. If your revolver is the standard model it would be impossible to equip it with target sights. You can, however, have a Lyman ivory bead front sight No. 27 fitted over the standard front sight, which will improve it for target practice. I have a .44-40-200 Bisley model thus equipped and it is very satisfactory. I know of no extension stock adapted to any of the new model Colt revolvers. Extension stocks were made for the old powder and ball Colts of 40 years ago. Some of these may yet be purchased of Francis Bannerman, No. 501 Broadway, New York. I believe it would not be difficult for a gunsmith to fit one of these stocks to a new service Colt. The Smith & Wesson people make a very handsome extension stock for their .44 revolver, which might be modified to fit the Colt New Service.—R. A. K.]

### THE ITHACA 20-GAUGE

EDITOR GUN DEPARTMENT: Having frequently seen favorable mention in your worthy magazine of the 20-gauge gun, I beg permission through its columns, to add my opinion.

I have recently purchased through the Ithaca Gun Company a special 20-gauge No. 3 Krupp ejector gun. To say that I am greatly pleased both with the gun and the generous treatment received from the Ithaca Company, puts it mildly, indeed. The gun is a beauty and is far superior in finish to anything I have ever seen costing within \$20.00 of its price. The balance and shooting qualities of the Ithaca Gun are too well and favorably known to need comment, yet I never thought it possible for a 20-gauge gun to shoot as this one does. It simply convinces me that the modern gun of this gauge has been greatly underestimated, and that when its possibilities are more thoroughly known, it will at once become the gun for the man who takes pride in being a good shot, and who does not wish to carry a large gauge, heavy gun (or a featherweight-in-effective one) and weighty ammunition, especially for field shooting.

Two or three things certainly deserve very favorable mention in the new Ithaca gun, viz.:—The new locks which work exceedingly smooth and make the gun exceptionally fast in its action: The two large ejector stems in the automatic ejector

(and which in my gun work to perfection) instead of a single stem split in the middle and thus affording a very narrow striking surface for the ejector hammer, as used by many gun manufacturers. And the dove-tail method used in fastening the stock to the frame, which absolutely prevents its spreading out on the sides, a fault not uncommon in many hammerless guns. Yours truly,

GEORGE M. SPAHR.

### THE SPANISH MAUSER

EDITOR GUN DEPARTMENT: Will you kindly give me such information as you can in regard to the 7 m. m. Spanish Mauser rifle sold by F. Bannerman, New York. Probably you have shot the rifle referred to, or are otherwise in a position to give me some particulars as to whether or not they are accurate and reliable and fit for hunting any big game on the continent. Should I procure one I intend to have the barrel shortened and equipped with sporting sights. What is your opinion of the 7.65 m. m. Mauser Carbine? I should like to get a serviceable arm, not a mere relic. Thanking you for any information you may be able to give, I am, yours,  
G. G. SCHEMLING.

[The Spanish Mauser 7 m. m. is one of the strongest shooting arms of its caliber made. Its ballistic record with imported ammunition and full length barrel is as follows: Maximum range, 4,500 yards; killing range, 3,000 yards; point blank range, 300 yards; muzzle velocity, 2,300 foot seconds; muzzle energy, 2,025 foot pounds. The bullet weighs 170 grains, and the powder charge is 36 grains of smokeless powder. The caliber, 7 m. m., measured in hundredths of an inch, is .285. Although it has not the stopping power of the .30-40 cartridge with the 220 grain bullet, yet a hunter armed with one of these rifles need fear no game on the American continent. As the Spanish Mausers sold by Bannerman are all second hand arms cleaned and refinished, the question of accuracy could only be determined by actual test. I am of the opinion that if you would state your needs to the Bannerman people, and ask them to select a 7 m. m. Mauser with as perfect a bore as possible you would run little risk of getting a poor shooting arm. It is possible to reduce the length of the barrel, but with proportionate loss of velocity and energy. The Krag rifle has a 30-inch and the Carbine a 22-inch barrel, and the difference causes a loss in velocity of 85 to 100 foot seconds. With arms as powerful as these, the slight loss of velocity and energy is considered by most hunters as more than compensated for by the greater convenience of the shorter weapon, in mountain climbing, when hunting in dense cover, or as a saddle gun. The 7.65 m. m. or .30 caliber Mauser is a good arm either in rifle or carbine length. It would answer to the same general description as the 7 m. m. Should you be so fortunate as to get a good barrel, it might be worth while to convert the arm into a sporting model. Some friends of mine recently bought a couple of Mannlicher carbines from Shoverling, Daily & Gales, No. 302 and 304 Broadway, New York. They were Schilling and Haenel Mannlichers, 8 m. m. and were in excellent condition. I think they cost ten dollars each and they were worth the money. You might be able to get something to suit you there.—R. A. K.]



marsh, we decided to wade the marsh and see if we could find it. Jim took one side and I the other, and we started to feel our way down stream. Then it clouded up, and everything went wrong. While feeling my way along through the muddy bottom I suddenly sank to my knees in quicksand, and fell over sideways. My pack went over my shoulder and started down stream while I floundered around to get on my feet again. I caught the pack before it got out of reach and then gave all of my time to getting out of there. I got one foot on solid bottom and by falling over sideways and working my foot in every direction finely got out and took my back track for solid footing. Talk about being scared! Say, I'll bet chalk would have made a black mark on my face. I am an old riverman and have seen all kinds of water, but that was the first time yours truly ever was scared by water. Jim had been in just the same fix and at the same time so neither of us could have helped the other. Well, we didn't find the boat. The bank was good enough for us after that.

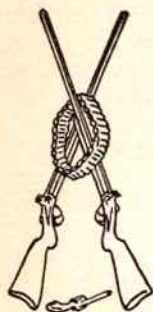
At the lower end of the marsh we hit the river again and here we got our first big trout. I got one 19-inch rainbow and one 17-inch brook trout out of one small pool, and the fight the rainbow put up was worth all the trouble it took to get him. Then ahead on the bank again, around the next marsh, through alder bottoms and cedar swamps, over hemlock ridges, through windfalls and spring holes, where the brush was so thick that a rabbit had to have a search warrant to find his den, and all the time the 'skeeters and punkies were doing double duty on our face and neck. We came at last to the old Labbs dam, and here, to cap it all, down came the rain, and it rained as only it can rain when you are seven miles from nowhere. Not having a tent with us and night being at hand, it behoved us to find somekind of shelter. Taking our small ax I went about twenty rods to where there were several hemlock trees and peeled three pieces of bark, about five feet long and

four feet wide, which we carried to the dam, and putting our chuck under one, we rolled up in our blankets, lay down on the wet ground and pulled a piece of bark over us. Then like huge turtles in a shell we tried to sleep, while it rained, rained, rained! When we got tired lying on one side, we would roll over and drag the bark with us. Of course the water did not run under us. Oh, no! It rained all night and at daylight I crawled out of my shell, went into the timber, found a rotten stump and started a good fire. Then I called Jim. He came crawling out like an old bear, and going to the river got a pail of water which we soon converted into hot coffee, with which we washed down our cold lunch, while it rained and still rained. After waiting for an hour or so to see if it would clear up, but seeing no sign of its doing so, we hit the river again and started for the mouth. And it rained! Oh! how it rained! From the Labbs dam down to the over-flow of Post Lake dam, a distance of about two miles, is one of the finest reaches of stream that I ever cast a fly on—gravel bottom, sandy bars, deep shady pools, swift water, gentle ripples, large rocks, old windfalls with piles of driftwood underneath which are deep pools, a stream wide enough to use fifty feet of line in, and all walled in by banks of forests of hemlock, birch and cedar—a stream to delight the lover of a fly-rod, where the rainbows flirt with their cousins of the speckled class, in every pool, the gamiest trout it was ever my lot to lure with a fly.

I want to spend one more afternoon and evening on this stretch of river and if the good Lord spares me I will be there next June. When we got to the overflow we struck across country to the farm of John Powell. From there we walked to Pearson and after a hearty supper at the home of Will Spencer, we went to bed. It is needless to say we did not use any hemlock bark here. The next morning we took the stage for Deerbrook, and the train from there home, ending a trip that neither of us will ever forget.

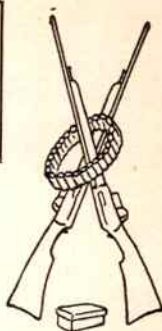




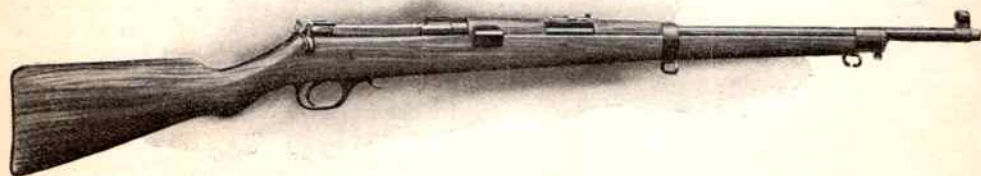


# GUNS AND AMMUNITION

EDITED BY ROBERT A. KANE



This department is intended to be a place for the exchange and discussion of views on any subject pertaining to arms and ammunition, from which no one with an idea to advance shall be barred. The only conditions are that the opinion must not be manifestly absurd, that it be expressed in courteous language and that no personalities be indulged in. Each opinion is printed for what it is worth and its publication does not commit the editor to the view expressed. The widest range will be permitted and our readers are invited to make free use of these pages, but it is important to remember that *under no circumstances will personalities ever be permitted.*



THE MARK III, TARGET RIFLE

## THE NEW ROSS RIFLE

PART II

By EDWARD C. CROSSMAN

**A**CTING on the supposition that the rifle lacked power over a cartridge that might refuse to go in or to come out of the chamber, through the straight back and forward motion of the bolt, I understood to demonstrate my theory. After about three dozen attempts I gave up the job and admitted that I was wrong. I dented and battered cartridges in every conceivable way in reason and several times added a couple of grains of sand for good measure. The net result of my work was to prove that the Ross would seat or extract any cartridge that the New Springfield would handle and would do the work quicker at that. And the New Springfield will submit to more abuse in this line than any rifle I know of. I have seen a rifleman take his Springfield and hammer the bolt handle with a piece of 2x4-inch timber to get it open, but it would finally come open and with it would come the cartridge. It is not

necessary to hammer a lever action in this way for the good reason that the extractor will give up the job before such pressure becomes necessary.

The secret of operating the Ross bolt easily is to make the motions sharp and positive. A little jerk, such as a child could give, opens the bolt, in the process extracting the cartridge and compressing the main spring. But apply a slow and steady pressure and the bolt works harder than any I have yet handled. The same directions apply for closing the bolt. A sharp push forward—but not necessarily with much pressure, seats the cartridge as easily as though no cartridge were in the rifle. The bolt seems to require a sharp, quick motion, the momentum of the moving bolt, turning the lugs either into or out of their recesses without effort. It is the only rifle that works easier and more naturally from the shoulder than from any other position and the user will find himself habitually



keeping the butt at his shoulder while he throws in a new cartridge—merely because that is the handiest and easiest way of working the bolt. The shoulder affords a solid medium against which to pull the bolt, while with factory ammunition, the bolt can be closed by a push of the little finger, there being none of the tendency to pull the rifle away from the shoulder, found in the lever action rifles or those compressing the main spring on the closing movement like the Lee-Remington.

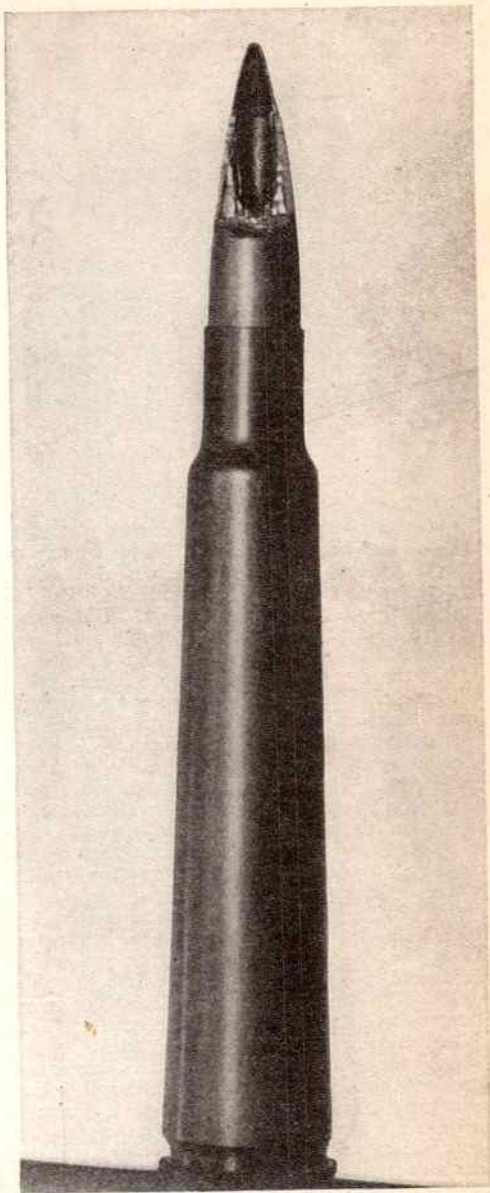
Sir Charles Ross writes that the Ross bolt has more extracting power than the turn-bolt type and while at first glance this seems impossible, yet a careful examination of the principle of the bolt, the power gained by the long movement of the bolt, while the locking lugs are turning out of their seats—and moving back 1-32 inch, persuades one that this statement may be right after all. My own experience at least, using the .280 cartridge, proves that the Ross will extract any cartridge it has seated and that it will seat anything a rifle should be asked to handle. I have not used the rifle with the .303 British cartridge and the .280 has a terrific taper, making it easier to extract, but I do not doubt the rifle's ability to handle any cartridge with complete success.

With the factory ammunition I have used, the bolt came open as though the rifle were empty, there being less difference between it loaded and empty than there is in the Mauser type under the same circumstances.

The magazine is of the Mauser, double column type. The follower, however, instead of being actuated by a double leaf spring as on the Mauser, is fastened to a bar 7 inches long that is pivoted in the forestock. A spiral spring in the forestock presses up this bar—lifter the Ross people call it—and this raises the magazine follower. In connection with this magazine device is another peculiar Ross feature that makes the rifle one of the nicest arms to load of any on the market. A finger piece is set on the right side of the rifle just forward of the receiver and so set that the fingers of the left hand, grasping the rifle normally, can press this finger piece downward. Depressing the finger-piece drives down the magazine follower to which the bar is fastened. To load the rifle it is only necessary to press down the finger piece, lowering the magazine follower and leaving the magazine open. Then it is necessary merely to throw five cartridges into the magazine and move the finger-lever up and down a couple of times, when the rifle is ready for use. There is no crowding of cartridges in through a loading cover against the pressure of the magazine spring, no careful placing of cartridges in the grasp of a follower, it is even easier than stripping a clip into the magazine.

The magazine follower is set lower than that on the Mauser type of rifle, with the result that for single loading it is only necessary to drop the cartridge into the receiver and close the bolt. There is no pressing of the cartridge into the magazine necessary. With the New Springfield this is impossible with magazine cut-off turned on because the magazine follower holds the bolt open. With the cut-off turned down, this loading is unhandy because the space left will not permit the loading of the cartridge unless it is slipped sideways.

In accessibility of parts the Ross is not the equal of the Mauser. The magazine is fitted with a small

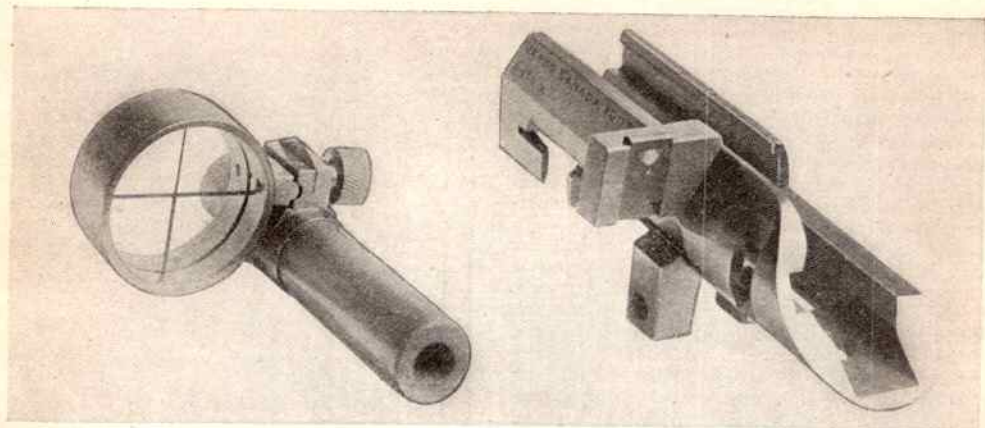


THE ROSS .280 COPPER TUBE CARTRIDGE. BULLET CUT OPEN TO SHOW THE HOLLOW COPPER POINT

plate—in the sporting models at least—the military I have not seen—this to allow the cleaning of the magazine from the bottom, but the entire magazine floor-plate, follower and spring cannot be taken out by the mere pressure of a catch as on the Mauser or New Springfield.

The Ross bolt is not as easily taken apart, although it can be taken out of the rifle as easily as any bolt used. The bolt stop is a plunger, with a spiral spring, and thumb piece at its upper end,





THE ROSS OPTICAL SIGHTS

Pressing the stop down into the receiver allows the bolt to slide out of the rifle. The bolt is taken apart by pulling the firing pin head back until the stop-pin is exposed. This can be pushed out with the point of a cartridge, ordinarily. The extractor hook is lifted from the head of the spindle and the spindle then turned out of the bolt, carrying with it the firing pin and the main spring.

The receiver walls are not cut away on either side but continue up and nearly cover the bolt when it is closed. On the Mauser the right receiver wall is cut away and the cartridge is ejected straight out to the right. The opening between the walls of the Ross receiver is just about wide enough to admit the .280 cartridge and but one-third of the circumference of the bolt is exposed to view. The wood of the stock is also continued higher than on the Mauser. There is no raised part on the receiver similar to that on the Mauser at the rear end.

With the bolt blued and the flat lines of the receiver, the rifle is wonderfully neat in appearance. To the writer it is the handsomest rifle he has seen, both in lines and in beauty of finish. The accompanying illustration gives an idea of the lines of the Ross breech but not of the finish.

This rifle is fitted with a peculiar sear arrangement which is entirely new to me although I have seen practically every standard bolt action rifle made. The sear nose is cut at a slight angle to the vertical line on which most sear noses are cut. The sear notch on the firing-pin head is also cut at an angle to the vertical line but in the opposite direction from the angle of the sear nose. Lying just in front of the sear nose—considering it as facing to the rear—is a hard steel roller, pivoted at right angles to the axis of the rifle and set so that its top is nearly as high as the top of the sear nose. The roller is hung in a frame pivoted in the receiver and the roller is held up in place by a spring. The sear itself is hung inside this frame on which the roller is hung so that when the roller is depressed, the sear is also slightly depressed. The converse is not true, however, that depressing the sear nose, moves the roller.

The purpose of the idler or roller is to hold the firing pin head to a certain position on the sear-nose,

taking up all play and resulting in the finest pull I have seen. The sear notch in the firing-pin head has little chance to batter up the point of the sear as the roller takes up most of the blow as the bolt is rapidly closed.

The rifle has the most perfect pull of any arm I have seen—outside a Colt revolver. There is first the regular "take-up" of the military pull, clean and smooth and with no feeling that the rifle might possibly be discharged by pulling the trigger through this first motion. Then with this take-up removed, the rifle pulls off clean and sweet at about  $3\frac{1}{2}$  pounds minus grate, creep or backlash of the trigger. The whole trigger mechanism feels as though it had been honed to a mirror-like smoothness and then adjusted like a watch—as it has been. Personally I prefer the military pull to the fixed pull used on the ordinary rifle. To my mind it gives the finger and the trigger a sort of acquaintance with each other. The resistance being always the same, one can tell when the fingers are cold and stiff, just how much pressure is being applied, by watching how easily or hard this take-up is removed, without finding out by having the rifle fired prematurely as sometimes happens when the fingers are cold and numb.

As to the strength of the Ross rifle, I cannot speak from personal experience, except that the rifle is still intact after about 80 rounds of the sporting cartridge, giving 51,000 pounds breech pressure. Sir Charles Ross writes me on the subject:—

"The factory tests show our rifles to be stronger than the Mannlicher or Mauser; in fact in designing my .280 cartridge I so arranged matters that these rifles were not able to take the pressures developed, thus preventing my competitors from reaping any advantage for their rifles with the use of my ammunition."

Examining the rifle one is impressed with the strength of the locking mechanism.

The firing pin cannot reach the cartridge until the rifle is fully closed—in common with all well designed rifles. The sear has a projection that rises behind the rear ends of the lower guide ribs on the bolt, preventing the bolt from being started back while the trigger is being pulled, although of





THE ROSS BREECH, SHOWING THE BOLT HANDLE AND THE SAFETY AT THE SAFE POSITION

course the strain of the explosion does not fall on the bolt but on the locking lugs on the spindle.

Sir Charles Ross and Ferdinand Ritter von Mannlicher either were impressed with the same idea at about the same time or somebody did a rank piece of stealing from somebody else.

Examining the Ross I was impressed with the idea that I had seen drawings of the same bolt plan somewhere before. On investigation I found that the drawings I remembered were of the Mannlicher straight-pull carbine, Austrian Model. On getting out the drawings and comparing them with the Ross I found the two bolts almost identical in plan—so much so that no patent office would grant on either bolt, had the other been patented prior to the time of the second application.

The Mannlicher referred to is known as the Austrian Model Carbine, Model 1895 in Mannlicher's drawings, but the rifle was submitted to the board of officers of the United States Government, sitting to select a new rifle for our troops, in 1891, 18 years ago. The plan of bolt is evidently not new and the question comes up as to the originator of the design. Sir Charles Ross holds patents on his bolt in the United States; Germany; Belgium; France; Spain, and Great Britain; so it is evident that if Mannlicher was the real inventor, he did not care enough for his idea to have it patented as it is certain that Ross could not have obtained his patents with the Mannlicher bolt already patented—they are practically alike. The Mannlicher used the single column plan of magazine, used on nearly all other types of Mannlicher rifles, while the Ross uses the Mauser double column type but the bolts are too much alike to allow of the hypothesis of simultaneous invention. Somebody did some stealing and I suspect our Austrian inventor is the party to shoulder the responsibility.

The stock on this particular rifle is the best shaped of any I have seen, while the wood and finish are exquisite. The wood used is heavy Italian walnut, finished with the genuine London hand-rubbed surface and with grain as fine as any stock I have seen. The wood is particularly hard and close grained, the surface being fairly velvety in its soft smooth feeling. The comb is rather

high, while the heel drops but  $2\frac{1}{2}$  inches. The length of the stock is  $14\frac{1}{2}$  inches. Few rifle cranks have seen a stock of this length but in spite of the custom of making rifle stocks much shorter, I am impressed with the splendid "hold" of this rifle with the long stock.

The pistol grip is checked with a large pattern that makes holding easy, while the fore-stock—or what would correspond with it were the stock made in two pieces—is nicely checked to prevent the hand slipping. The grip is very large, measuring  $5\frac{1}{2}$  inches in circumference or about 1 inch larger than the average grip.

Queerly enough this rifle is not fitted with butt-plate, the wood being checked along the butt to prevent it slipping on the shoulder. Sir Charles Ross states that to fit these high priced rifles with butt plates would kill their sale in England but that for the Canadian trade, butt-plates are fitted.

The fitting of the stock to the receiver and barrel and the method of fastening it, is characteristic of the care used in the make-up of the rifle. A combined sling-swivel and forestock screw passes through the forward end of the stock and screws into "socket-block" on the barrel—a ring passing around the barrel and having a lug in it to accommodate the swivel screw. No slots are cut in the barrel, a departure from the delightful and cheap method used by most American rifle makers.

The forward end of the trigger-guard plate is fastened to the forward end of the receiver by two screws instead of one, both screws of course passing through the stock as well. These two screws, set close together, have serrated heads. A third screw sets into the plate close beside them, this screw also being made with serrated head. Its head engaging the heads of the two fastening screws, prevents them from turning out. A steel plate is set into the wood against which the recoil lug of the receiver butts, cutting down the chances for splitting the stock, to a minimum.

The customary screw passes through the stock at the tang from the rear end of the guard to the rear end of the receiver. In addition to these fastenings another screw or bolt passes through the stock just above the forward end of the trigger



guard, a construction used on our newer models of the New Springfield and helping to prevent the stock from splitting at this point.

The barrel on this rifle, as stated, is  $30\frac{1}{2}$  inches long, the target pattern and one not regularly fitted to the sporting rifle. This barrel is one of a pair of sample barrels sent to England for test last year. The other barrel of the two is fitted to Sir Charles' personal rifle that he uses in Scotland.

The barrel calibrates .289 although the cartridge is called .280, evidently being given the size of the barrel before it is rifled. The rifling consists of four lands of the same shape and appearance as those used on our own New Springfield. The twist—for the .280 cartridge—is  $8\frac{1}{2}$  inches.

The Eley people may be bully cartridge makers but they failed to show much class in turning out this sporting ammunition—according to American standards and according to the present theories. The bullets run from .286 to .287 inch for a barrel that measures .289. This is, however, according to Hoyle—Hoyle in this case being Sir Charles Ross, who states that our theories of the proper fit of bullets are wrong; and that with velocities up around 3,000 foot-seconds previous ideas are overturned by actual experience. The Ross people guarantee the life of their .280 rifle for match purposes—which means the length of time the barrel will retain its extreme accuracy—to be from two to three times greater than that of a .303 barrel with its ammunition of, but 2,000 foot-seconds. Evidently the theory is that the bullet must upset to some extent from the enormous pressure at its base and this being true, the slight difference in the size of the barrel and bullet cuts down pressure and wear through the lack of excess friction.

Sir Charles Ross states that with proper ammunition the rifle will hit a ten cent piece every time at 80 yards. Which, to be slangy, might be called going some.

The barrel is cut off perfectly square at the muzzle instead of being slightly countersunk as with most of our rifles. While this adds to the chances for burring the edge of the bore, we have Ross' word for it that a more perfect muzzle can be obtained in this way than by the other.

The barrel is heavier than the New Springfield barrel. At the very muzzle this barrel measures .650 inch while the New Springfield measures .620 inch. At a distance of 24 inches from the receiver where the New Springfield muzzle would come the Ross barrel measures .705 inch.

At the receiver the barrel is of large size, measuring  $1\frac{1}{2}$  inches but tapering down to .825 inch three inches forward.

While this shape has been pointed out by Lieut. Whelen as being one conducive to flip, yet this barrel, being quite heavy, even at the bottom of the taper and being without slots, would have less than barrels of less sudden taper but with slots cut nearly opposite each other.

The Ross measures .825 inch just forward of this taper with a bore of .289 inch. A well known rifle made in this country for high power military cartridges measures .750 inch at the same place with a bore of .308 taken out of this thickness and has slots cut in the barrel besides. This rifle *does* flip and flip badly.

The sights consist of an ivory bead front, set in a socket block, banded around the barrel, and a military rear of something the shape of the old Krag 1898 sight, but is without wind-gauge adjustment. The regular equipment of the sporting rifle is a double leaf rear sight set in a socket block, with ivory bead front.

The rear sight is set on with pins passing through the upper part of the barrel at right angles to the axis of the piece, with a couple of screws to help out. It is set rather far forward, the makers preferring to sacrifice sighting radius to obtain the clearer definition of the rear sight, obtainable only when it is some distance from the eye in the case of the open sight. The regular target rifles are fitted with the regular British military sights—for which little may be said that is good and much that is bad.

A 22 $\frac{1}{2}$ -inch sighting radius for a 30 $\frac{1}{2}$ -inch barrel seems rather short to one familiar with the method of affixing the rear sight on the New Springfield. However, it may be good gun making to put the sight well forward on account of the increased definition of the rear sight when aiming, even at the expense of the inter-sight distance. The Lyman pattern would, of course, be superior to the open sights furnished.

The sight furnished by these people on the telescope plan seems to offer some advantages. This consists of a block fixed permanently to the left side of the receiver and fitted with a lens. The front sight consists of a ring containing another lens and cross-hairs. The ring is set on the left side of the barrel and can be easily detached by turning a thumb screw, it being adjusted to slip on over the front sight base, but does not obscure the front sight itself. The lenses of the rear part of the combination are detachable and are sold half a dozen in a set, being of different grindings to suit the purchaser's eye. The clumsy tube of the telescope sight is done away with and the sights can be carried in the vest pocket.

The finish of this .280 rifle which I am using is as fine as one can ask for, even though accustomed to handling the finest of the high grade shotguns. There is no engraving but the friction parts are polished as they should be, while the bluing is of the dull, matt finish and evidently put on to stay. The bolt handle is blued and in spite of being handled perhaps a thousand times by myself and friends, there is no sign of its wearing bright. The price is too high for most of us and the rifle is not put out in the .280 bore for the poor man but most of us would agree, could we inspect the rifle that it would be hard to turn out a more perfect arm, for any amount of money.

[TO BE CONCLUDED]

See page 212



# SMOKELESS POWDERS

By CHAS. NEWTON

IN considering the action of the smokeless powders now in use in sporting arms it may be well to first mention some of the elementary laws of physics, not for instruction, as those laws are so well known their restatement might savor of pedantry, but for reference in the matter which follows.

As is well understood matter consists of molecules, which are acted upon, in their relations to each other, by two opposing forces, molecular attraction and molecular repulsion, and both these forces exist between the same molecules at the same time, but one force usually overpowers the other and gives to the matter its characteristic form.

Matter appears in three forms, solids, liquids and gases.

In the solids the molecular attraction far overpowers the repulsion, the hardness of the solid being according to the extent to which the molecular attraction prevails. In the liquids the forces of attraction and repulsion are about balanced and as a consequence the molecules move freely upon each other and definite form is lost. In the gases the molecular repulsion is greater than the attraction and the molecules tend to get as far away from each other as possible, consequently, if not confined they are dissipated.

The application of heat to matter tends to weaken the molecular attraction and we find metals, if sufficiently heated, first liquefy and then become gaseous, while many solids turn directly from a solid to a gas, without the intervention of a liquid state.

Since a gas is merely the molecules which might have composed a solid, were the molecular attraction greater than the repulsion, it follows that a certain number of molecules in the form of a gas occupy far more space than if they were in the form of a solid, and it is this transition from a solid to a gas which produces the phenomena of combustion and explosion.

It is one of the natural laws governing gases that, inasmuch as the space which they occupy depends upon the restraint which is put upon the molecular repulsion, they are elastic, or capable of being compressed and of immediately expanding to the limit permitted instantly the restraint is removed, and it is this expansion of the gas generated by the burning of the powder which propels the bullet.

Another of the natural laws governing the gases is, compression of the gas raises its temperature, and conversely expansion of the gas lowers its temperature; also a rise in the temperature of a gas increases the molecular repulsion and consequently increases the pressure upon the vessel which confines it, while a lowering of the temperature has the opposite effect.

With this brief reference to the physical laws mentioned we will turn to their application to smokeless powder.

A kernel of smokeless powder, insofar as the principles which govern its burning are concerned, does not differ materially from a lump of coal, and the charge of powder in the cartridge shell practically duplicates, when fired, the chemical changes and changes of form which take place in a hod of coal when placed in the stove and ignited, except as to the length of time required to effect the change.

Both the powder and the coal are solids, are combustible, are set on fire and burn until such time as only the incombustible residue remains, unless the fire is permitted to die out earlier. The combustible portion of each is turned to gas, and the principal difference between the two substances is, the powder is transformed into gas in so short a period of time that we consider it practically instantaneous, while the coal may require half a day.

The difference in effect between a mere *explosive* such as nitroglycerine or dynamite and a charge of powder used as a *propellant* for firearms is solely in the length of time in which the change of form from a solid to a gas takes place. Smokeless powder is not a true explosive.

In explosives, proper, the change of form from a solid or liquid to a gas takes place through the molecular attraction being shattered and the entire mass letting go, as it were, at once, and being instantly transformed into gas, while in smokeless powder the transformation, while sudden, to all appearances, is really progressive, the molecules taking on the gaseous form gradually as the molecular attraction is burned away.

This *progressive* change in form of the powder to a gas is what renders practicable the use of powder as a propellant. If we were to place in the cartridge shell a sufficient amount of nitroglycerine to produce, upon explosion, a chamber pressure of 30,000 pounds per square inch and explode it, the maximum pressure would exist before the bullet left the shell and as it passed along the barrel it would have only the expansion of the gas to accelerate its movement and the result would be much the same as in discharging an air gun the resulting velocity of the bullet being very low. On the other hand, if we were to discharge enough nitroglycerine in the chamber to give a practicable velocity, the initial pressure would be such as to destroy the weapon, since, even though the initial pressure be great, as the gas drives the bullet along the barrel it finds the size of the chamber in which it is confined constantly increasing, therefore it expands; as it expands it cools and practically shrinks in volume because of the weakening of the molecular repulsion through the cooling. This shrinking, of itself, tends to further reduce pressure and the further reduction of pressure produces still further cooling and consequent shrinkage in volume of gas or rather in molecular repulsion, so we find a combination in which the cause increases the effect and the effect increases the cause with the result that



the pressure falls off, not only through the increasing size of the chamber space as the bullet passes along the bore, but through the cooling and consequent loss of expansive power of the gas itself, and the pressure, which might tax the strength of the strongest rifle at first, has dwindled away to insignificance before the bullet has reached the muzzle. The effect upon the velocity of the bullet would be obvious.

With smokeless powder, on the other hand, when ignited it begins to burn and gradually change into gas, and when gas has been accumulated to such an extent that the pressure is sufficient to overcome the resistance offered by the weight and inertia of the bullet and the necessary deformation of the bullet in forcing it into the rifling, the bullet moves forward along the bore of the barrel, thus increasing the size of the gas chamber behind it.

However, during this time the mass of powder kernels, in this chamber are still burning merrily and still generating more gas to take up the space constantly being furnished by the advancing bullet so that a comparatively uniform pressure is kept up on the base of the bullet and its movement constantly accelerated until it leaves the muzzle at a very high velocity and this without imposing any undue strain upon the chamber or action of the rifle.

Immediately upon the bullet leaving the muzzle of the rifle the gas escapes into the atmosphere, the pressure goes down to the normal pressure of the atmosphere and the burning of the kernels, if they have not been completely consumed stops immediately. We frequently find, upon looking through the bore of the rifle, a few small rings of unburned powder which have not been thrown out by the blast of the discharge. These unburned rings are merely what was left of the kernels at the time the bullet left the muzzle and their presence is always an indication that the powder charge is not being properly consumed, due, either to the use of too slow burning powder, to not loading sufficiently heavy charges to develop sufficiently high pressure to burn the powder within the length of the barrel or that the barrel is too short for the best results. As an example of this, the regular charge for the .25-35 cartridge with 117 grain bullet is 19 grains Lightning powder, and after each discharge several rings of this unburned powder will be found in the barrel, while if the charge is increased to 20 grains the powder will be completely consumed because of the higher pressure developed.

Were the entire powder charge of an ordinary sporting rifle to be transformed into gas while the bullet was yet in the chamber, no rifle of a weight small enough to be portable would be strong enough to withstand the strain, therefore it is only this progressive burning of the powder charge which makes possible our sporting weapons.

While the above is what actually takes place when the rifle is discharged it does not necessarily follow that the operation takes as much time as we have occupied in telling of it. In fact, with a bullet fired from a rifle having a barrel 24 inches in length from the bullet seat in the forward end of the chamber to the muzzle, at a muzzle velocity of 2,000 feet per second, the average velocity through the barrel is 1000 feet per second and the operation requires 1-500 of a second.

Having thus seen the importance of the rate of burning of the powder we next consider the conditions which govern that rate of burning.

This, as is the case with other forms of fuel, depends somewhat upon the amount of heat applied when it is ignited as will be readily appreciated if we try to fire smokeless powder with black powder primers, but as primers adapted to ignite smokeless powder are in such universal use and develop so nearly the same degree of heat this point need not be discussed.

The next, and most important element to be considered in this connection is the pressure of the gases. As has been already stated, the more the gases are compressed the greater the amount of heat developed and as the burning kernels of powder are completely surrounded by the gas, the hotter the gas is the faster the power will burn, just as a lump of coal thrown into an intensely hot furnace will be burned, or transformed into gas, faster than if placed in a kitchen range with the draft openings closed.

Therefore, the rate at which the powder burns depends largely upon the pressure and consequently upon the temperature of the surrounding gases.

The rate of burning of the powder being controlled by the pressure to which it is subjected, we next turn our attention to the conditions governing pressure and find that the greater the resistance which the bullet offers to the expansion of the gases, the greater is the pressure developed; this because the bullet remains longer in the shell after the charge is ignited, before moving forward under the accumulating pressure of the gases behind it, consequently, the pressure of the gases being higher at the time the bullet begins to move, their heat is greater and a more rapid burning of the powder results than would take place at the lower temperature developed by the lower pressure consequent upon the charge meeting with less resistance.

The element of resistance having, therefore, such an important bearing upon the question of pressure generated, and through this, upon the efficiency and safety of the charge, we next examine the items which enter into the resistance.

Resistance is primarily furnished by seating the bullet in the shell. Without the bullet, the powder, even if not blown out by the primer blast, would burn slowly, at about the speed of a parlor match. With the bullet the gases are confined until considerable pressure is acquired and this burning is so hastened as to stimulate an explosion, although, as stated above, a true explosion does not take place in the discharge of a properly loaded rifle or shotgun. The resistance offered by the bullet depends upon its hardness, the depth to which the rifling cuts the bullet, the length of bearing of the bullet, the tightness of the fit, the degree of crimp of the shell, the degree of smoothness of the bore, the twist of the rifling and, last but not most important of all, and I believe within reasonable limits almost obscuring the effects of all the other causes, the weight of the bullet. A series of experiments was made with a New Springfield rifle measuring .308 inch in diameter to the bottom of the grooves; it was used with bullets of varying weights and with varying diameters, the weights running from 150 grains to 190 grains and the diameters varying from .307 inch to .311 inch, and it was found that the increase in diameter affected the pressures only



very slightly, while the increase of 9 grains in the weight of the bullet required a reduction of one grain in powder charge to avoid increasing the pressure.

The rate of burning of powder is also dependent upon the amount of air space left in the shell when loaded.

When the primer is exploded it projects into the inside of the shell a given quantity of flame of a certain degree of heat. This flame at once occupies all the available air space of the shell, consequently the more air space in the shell, the more will this flame be diluted and cooled by mixture with the air at the time of its contact with the powder, and conversely, the less air space in the shell, the less will the primer flame be diluted and cooled and the hotter will it be in its contact with the powder, the faster will it ignite the powder and the faster will the powder burn, other conditions being the same. Therefore the amount of air space in the shell is a very important factor in considering possible pressures, as the powders in use are designed for use with primers of certain standards of heat efficiency.

The rate of burning is also controlled to a certain extent by the size and form of the kernels.

The larger the kernel the less surface, in proportion to the weight of the kernel, is exposed to the flame, consequently, since the powder burns only on its exposed surfaces, the less proportional burning surface exists and the longer it takes the kernel to burn completely. Therefore it follows that a coarse powder requires either a hotter gas, and consequently a higher pressure, or a longer time in which to burn, and as the time for burning is limited by the length of the barrel and velocity of the bullet, the coarser powders are intended to burn under higher pressure and it is to enable the powder to withstand the higher temperature of the higher pressures that the coarser granulations are made.

In burning the charge it is desirable that it begin to burn slowly and that the rate of burning increase as the bullet moves along the barrel, thus avoiding undue pressure in the chamber but maintaining the pressure until the bullet leaves the barrel. This has been accomplished but very imperfectly as yet, owing to the fact that the kernels ignite only on the exposed surfaces and as they burn they grow constantly smaller and the burning surface, and consequently the rate of combustion, constantly decreases. To partially overcome this the kernels are, in the slower burning powders, made in the form of a disk with a hole pierced through the center. The surface of this hole likewise burns away and thus constantly increases the size of the hole and at the same time the burning surface and rate of combustion, thus offsetting, to a limited extent, the decrease of burning surface occurring upon the outside of the kernel. With heavy artillery in which the kernels of powder are large enough to be made in the form of cylinders pierced lengthwise with several holes and the barrels of which are so long as to permit of a much longer period of burning velocities of 3000 feet per second and upward are obtained with chamber pressures of 38,000 to 42,500 pounds per square inch. While with the Krag cartridge 40,000 pounds pressure produces but 2,000 feet per second velocity, and with the New Springfield cartridge to obtain 2,700 feet per second velocity requires a pressure of about 50,000 pounds.

The rate of burning of the powder is also regu-

lated to some extent by its composition, both in the chemicals used as "retarders" and by the use of ingredients giving off hotter or cooler gases upon combustion, but this will be touched upon later.

Having thus considered some of the principles governing the action of smokeless powders in general, we will consider their application to the arms and powders in use.

Smokeless powder has been, at the present time, applied to practically every firearm in use, from the .22 short and the pocket revolver cartridges giving pressures which are insignificant up to the 16-inch coast defense gun, and as the pressures vary from those measured by the hundreds of pounds per square inch to fifty thousand pounds per square inch, it will be seen, in view of the importance of the elements of pressure and resistance, that this powder cannot be used indiscriminately in the different arms.

The principal sporting powders in use in this country being the Dupont series of dense powders, they alone will be used for purposes of illustration.

The composition of these powders is practically nitrocellulose and nitro glycerine. The nitrocellulose consists of cotton chemically treated with nitric acid until it is saturated to a certain extent, then cleaned and all foreign substances removed, and then colloided, which consists of submerging it in alcohol, ether or acetone until those chemicals have "cut" the fiber of the cotton completely, leaving it a jelly-like substance known as a colloid which dries out into something resembling horn but utterly without any fibrous structure. It resembles very much, and in fact is practically of the same nature as celluloid. Before drying, however, it has added to it the nitro glycerine, if this be used, also certain chemicals intended to prevent it burning too fast, known as "retarders," and when it has dried to the proper consistency it is put into presses and forced out through minute apertures, each having a needle in the center, into little tubes like macaroni. These tubes are then cut into slices, cutting at right angles to the axis, and the result is the grain of powder as we purchase it today, with the exception that after cutting and drying it is rolled in graphite to give it a smoother finish. Of course this pressuring into macaroni applies only to those powders made with a pierced grain, some of the quicker burning grades having solid grains cut very small.

As stated above, the great variety of cartridges having such great variations in pressure, in air space allowable in the shell, and in weight, fit and hardness of bullet, require a corresponding variety of powders in order to get the best results.

In making the series of powders referred to two different mixtures, or colloids, are used. One colloid is used in making the W. A. military and Lightning powders, the composition of which is identical, and contains about 25 per cent of nitro-glycerine, and the other colloid contains about 37.5 per cent nitroglycerine and is used in making the grades known as Sharpshooter, Infallible, Unique, and Bullseye.

In loading these powders for the cartridges using heavy charges of powder with a long, small caliber bullet, thus giving conditions of greatest resistance and highest normal chamber pressure, the W. A. powder is used as it is made from the slowest burning colloid and is the coarsest in granulation of any of the powders named, although there is a still coarser granulation used by factories in loading the .405 Winchester cartridges, since they



are loaded with far less air space than other cartridges, this sacrifice of air space being rendered necessary in order to get sufficient of the powder in the shell to give the desired velocity, and the increase of pressure which would otherwise result from the sacrifice of air space is counteracted by the coarser granulation. This coarser powder is not sold to anyone except the cartridge factories. The W. A. powder requires a chamber pressure of about 40,000 pounds per square inch in order to burn completely and is the proper grade to use for the Krag cartridges also the 8 m.m. and 9 m.m. foreign military cartridges and others of that class. For the New Springfield a special powder is made developing less heat than the W. A., burning under a chamber pressure of about 45,000 pounds per square inch and is designated 1908 military.

The Lightning powder is, as stated, of the same composition as the W. A., but is of finer granulation and is used in cartridges using a proportionally shorter bullet than the military cartridges above mentioned, and burns completely under a pressure of about 30,000 to 32,000 pounds per square inch. This is used in loading the 25-35, 30-30, Savage .303, .32-40, .32 Special, 33, W. C. F. and the different auto-loading rifle cartridges, also in loading some of the numerous "high velocity" cartridges on the market, being black powder shells with metal cased bullets and which give a velocity midway between that of the black powder loads and the high power small-bore type. In some of this type of cartridges, notably the .32-20 high velocity, it would seem that but about one-half of the powder is burned, there being a large number of partly burned grains left in the barrel after each discharge.

The Sharpshooter powder is used in loading the black powder cartridges when it is desired to obtain about the usual velocity developed by black powder, also some of the "high velocity" type. This powder is made from the second colloid above mentioned, containing about 37.5 per cent nitro-glycerine and develops a much hotter gas than the other powders. It burns completely under a chamber pressure of from 20,000 to 22,000 pounds per square inch and is very powerful, a charge of 12 to 14 grains being sufficient to give the normal velocity in a .32-40 cartridge. This type of powder does not give off any more gas, that is any more molecules per grain of powder, than does the powders made from the other colloid, but the gas is so much hotter that it tends to occupy more space and consequently has far greater power. The novice is likely to get into trouble with this powder unless he follows directions carefully as, since the charge is so small, filling less than half the powder capacity of the shell, he is tempted to seek higher velocities by using more powder, and is likely to find his rifle bursted before the velocity has been carried very high. It is impossible to obtain very high velocities with Sharpshooter powder for the reason that to secure a high velocity involves not only a high pressure but a sustained pressure as above pointed out.

From the foregoing we trust it will be clear that it is impossible to obtain high velocities in ordinary cartridges by the use of the quick burning dense powders, and also that it is dangerous in the extreme to attempt to use them, except in accordance with the directions, unless one have a pretty thorough knowledge of their action and effect.

Infallible is a powder made from the same colloid as the Sharpshooter but of a finer granulation, and is adapted for use in shotguns and to

burn under a pressure of about 6,000 pounds per square inch. The charge of shot gives far less resistance than a rifle bullet, consequently this powder must burn far more readily than a rifle powder. It is very powerful, the charge for a 12-gauge shotgun being but 24 to 26 grains. It should never be used in rifles except in very small amounts, in large shells and with short bullets, as there must be a large air space to counteract the quick burning composition and fine granulation. When properly used it does fine work in short range loads but to load a full charge in a rifle would in all probability burst the rifle, probably accomplishing this before the bullet would be driven from the barrel.

Unique is another powder made from the same colloid as Sharpshooter and is of a fine granulation, intended for use in very small charges and with round or very short conical bullets in the military cartridges for indoor work; its action is much like the Infallible.

Bullseye powder is made from the same colloid as Sharpshooter and is the finest granulation made. It is intended for use in revolvers and to burn under very low pressures and with plenty of air space. It is not suitable for use in long barrels of any kind as it is burned so quickly that its effect, while strenuous, is shortlived and if safe chamber pressures are not exceeded low velocities will result if the barrel be long as the gas, which derives its power largely from its heat, quickly loses its energy as the bullet passes along the barrel. This is the most dangerous powder on the market to the uninitiated, owing to its quick burning properties, but is very stable and reliable and a most excellent powder when properly used.

From the foregoing we may deduce some general rules to be observed in loading cartridges with smokeless powder.

First, and this is very important, is to follow directions absolutely unless you know just what the effect of your departure will be.

Second, do not attempt to use any powder in such charges as will give pressures higher than those necessary to completely burn the powder, as in that case the development of gas is abnormally rapid and chamber pressures go up rapidly without material increase in velocity, as the action of the powder then begins to resemble the explosion of nitro-glycerine or dynamite rather than the burning of a propellant.

Third, never load a shotgun with rifle powder as it will not, owing to the lack of resistance to the charge, develop either velocity or pressure to any practicable extent.

Fourth, never load a rifle with shotgun powder except in very small charges and with very light bullets, as shotgun powder is intended to burn with slight resistance and consequently when confronted with a greater resistance of the bullet will in all probability burst the rifle.

Fifth, never try a new charge which you may think will be effective unless you begin with about half the amount of powder and work up to the charge desired by adding a grain at a time and watching the primers closely for pressure marks, and copper primers should be used.

Sixth, in case a heavier bullet is used, use less powder to allow for the increased resistance, while in case a lighter bullet is used, use more powder to compensate for the decreased resistance of the bullet.

Seventh, stop while you are sure your pressures are safe.



# WHY BOYS OUGHT TO SHOOT

By ADOLPH TOPPERWEIN

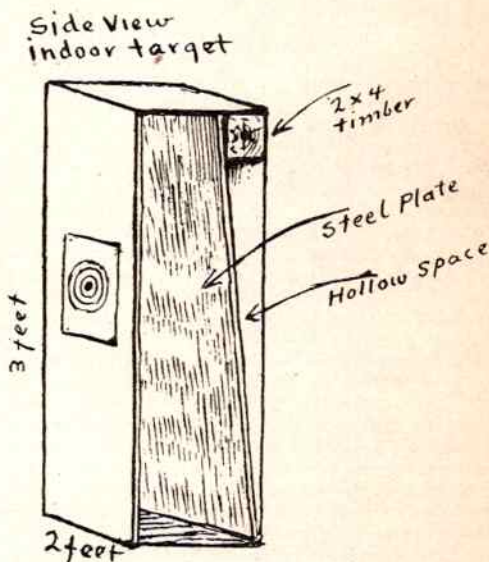
**D**URING the Spanish-American War there appeared an editorial in a Berlin, Germany, newspaper commenting on our volunteer services. The writer of the article said it was quite natural for the United States to be able to fill their ranks with volunteers, but what he could not understand was how in the world Uncle Sam could muster out these men, arm them and expect them to know how to shoot. Perhaps the editor of the above paper overlooked the fact that about 90 per cent of the boys born in the United States learn to shoot long before they are of age, which is one reason why we have today the greatest fighting nation on earth.

If you have a boy, do not think that just because you are sending him to school your responsibility ceases, for there are many other things for which he should be prepared, and by all means give him a chance to learn to shoot and become familiar with fire arms, as it is an accomplishment which will surely be of benefit to him in the future. Not only will a knowledge of this kind make him self-confident, but if you get your boy started in shooting it is most natural that it will keep him in the open; not in the streets where he will usually pick up bad habits, of which you will be obliged to break him later, but out doors in the woods, close to nature, and once started on this path it will always stick with him. A great many boys are cheated out of the opportunity to get acquainted with fire arms simply because their parents are afraid to trust them with a rifle or shotgun for fear of accidents. Most accidents with fire arms are the results of carelessness owing to ignorance and improper training. Any boy of good common sense can be taught the business end of a gun and its proper use, but you cannot expect him to know all about shooting a fire arm just because you went down town and bought him a rifle and a box of cartridges. Most all healthy boys are wild and reckless in all things and careless with fire arms, simply because they don't know any better, and although it may not take them long to discover that their gun is a dangerous weapon, they may in the mean while get into a lot of trouble; therefore they ought to be *shown at the very beginning*.

Do not hesitate to give your boy a chance to be a man. Give him a gun, show him how to load it, tell him that it is no plaything, but a dangerous weapon made for a *man*; tell him that under no consideration and at no time to point a gun *loaded* or *not loaded* at any living being *just for fun*, and that anyone who does so is a fool. Tell him that guns are liable to go off unexpected, especially so the ones which are *not loaded*. Show him that the little bullet or the charge of shot does not stop at the object he is shooting at, but that it may travel a great deal further and perhaps injure some one a great ways off. Show him how to

crawl over a fence with a gun without shooting his head off, and tell him how dangerous it is to pull a loaded gun out of a boat or wagon with the muzzle pointed towards himself or others. Tell him never to shoot at anything until he knows what it is. It may be your best friend, even if it does look just like a wood chuck.

When you have done all this, make a chum out of the boy, take him with you on your next hunting trip. It will do more to make a man out of him, than all the books you can buy. The correct age for a boy to begin to shoot is of course a question which ought to be studied closely. Some boys are big and strong at the age of 10 and even less; others attain the age of 12 or 14 years before they are in physical form and strong enough to handle



A HOUSE TARGET

any kind of fire arm. However, the average boy of 10 or 12 years, who is endowed with good common sense, can easily learn, with a little coaching, to handle a light rifle or shotgun of small caliber with perfect safety.

Some boys begin shooting even at earlier stages and we hear of them as good shots at the ages of six or seven years. Of course, these instances are rare, as the average boy will generally be a little older before he gets the shooting fever. The proper gun for a boy to begin with should by all means be a .22 caliber rifle, either a single shot or a



light repeater. A good single shot rifle is perhaps the best gun to start him with, as he will shoot more deliberately. This is especially so when the boy is small and not very strong. There are a number of good .22 caliber rifles on the market—Stevens, Remington, Winchester and others. A very popular boy's rifle is the Winchester single shot, bolt action, which is very accurate and so simple in construction that it is almost impossible to get out of order. Another popular gun is the Model 1906 Winchester repeater, a very light rifle having the trombone action. A good single shot rifle can be purchased for about \$4.00 and a repeater for \$9.00. Do not waste your money on cheaper guns, for even if you equip your boy with a cheap outfit he will soon want a better one. Ammunition for .22 caliber rifles is very cheap and a great advantage is that a .22 caliber rifle can be shot at home, indoors, if necessary. If your boy's heart is set on having a shotgun, and if he is old enough and strong enough to handle one properly, then you should secure for him a good single shot or double barrel gun of good make, either 20-gauge or 16-gauge. Do not try to make him shoot your own 12-gauge gun under any circumstances, as the heavy recoil will hurt his shoulder, make him flinch and forever spoil the chances of making a shooter out of him. Let him begin with a light load and do not let him shoot too much in the beginning. If he wants to shoot more, by all means get him a rifle, it will help him to be accurate. To learn to shoot well it is necessary of course to

practice a good deal. Shotgun ammunition is rather expensive, therefore the boy will get more practice and more real benefit by shooting the rifle, all of which will cost you a great deal less than the shells for the little shotgun, even if only a 20-gauge. Another great advantage in shooting the .22 caliber rifle is the fact that if the boy is unfortunate enough to live in a large city, where he cannot possibly get out in the woods to shoot except on very rare occasions, he can practice right at home.

Fixing a indoor shooting range is a very simple matter and inexpensive, and can be installed at home—in the cellar, in the garret, or even in the library with perfect safety. Take an ordinary packing case, 2 feet by 3 feet and about 8 or 10 inches deep, remove the cover and screw to the bottom of the box a  $\frac{1}{4}$ -inch steel plate which you can purchase at any hardware store. In screwing this plate it should be fixed on a slant by first nailing a 2 by 4 piece of timber to the upper end of the box, so as to incline the plate at the lower end to deflect the bullets or rather the "spatter" of the lead towards the bottom.

After you have all this in place, replace the cover, tack your paper target in the center of the cover, your bullets will pierce the wooden cover, strike the steel plate and fall harmlessly in small fragments to the bottom of your back stop. When you shoot a great deal it will sometimes be necessary to replace the cover for a new one, and a coat of white or black paint will give the whole outfit a neat appearance.

## THE EFFECT OF A SLANTING WAD

LAHORE correspondent recently wrote to this office asking what would be the effect of fixing the top wad of a 12-bore cartridge obliquely over the shot. His letter went on to say that he had lately seen some cartridges loaded by a native firm in which the top wads and turn-over had been badly treated. All the wads were fixed at a decided angle instead of at a true surface. He suggested to the man who had bought them that his shooting would be very erratic, which idea was pooh-poohed, and the query was in due course transferred to this paper for settlement. Nothing would have been easier than to write in general condemnation of such obvious bad workmanship, and to answer on first principles that the results would be bound to suffer. Mr. Griffith's authority could be quoted as having shown that slanting wads throw the pattern over to a very decided extent. In this lecture he certainly referred to the cartridge which had been used to illustrate the defect as an exaggerated example, but he was quite emphatic that when cartridges were so made the pattern was distinctly thrown over toward the way of the slant. With the modern equipment at the disposal of the Field testing department, in common with contemporary estab-

lishments, this kind of problem can be better examined than was ever before possible, at any rate as compared with the appliances which Mr. Griffith in his day was in the habit of using.

Recent experiments have shown that with an ordinary sound gun, accurately aligned on the target, the center of the pattern does not necessarily lie in the line of aim, neither are the results sufficiently consistent to enable the properties of a gun in this respect to be precisely defined. With the proof gun, as used for the ordinary 12-bore cartridge tests, which is more a piece of ordnance than any thing in the nature of a "small arm," these difficulties disappear. The total weight is 50 pounds, and the bulk of this mass is represented by the barrel. Therefore, the weight is evenly distributed around the axis of the bore. The gun is poised on suspension wires, supported by a beam in the roof, and it never deviates from its natural position, except perhaps to the extent of a slight leaning of the building when the wind is strong. The direction in which the gun is pointed is subjected to a system of unconscious observation with every round that is fired, for the ordinary requirement is that the charge shall be centrally located between two posts some 16 inches apart at 20 yards.



Therefore, the regularity and general evenness of the results produced, also the constancy of the line of fire, represented the behavior of the cartridges which are fired from such a gun, free of disturbances due to the idiosyncrasies which would exist in the case of a double-barrel shoulder gun. Cartwheel patterns occur in the usual proportion, according to the cartridges that are used, while patterns as a rule are close or open according to the conditions present in the cartridge.

Such a gun is obviously perfectly adapted for testing the real effect of any peculiarities of loading which might be supposed to influence the direction taken by the charge. For the present purpose the exact line of aim was carefully defined by opening the breech and taking a sight right through the barrel itself. An assistant held a rod vertically in front of the target and moved it about according to order until the precise center of aim had been defined. A nick, marking the vertical division of the pattern, was then made in the top edge of the plate, and after each shot had been fired a plumb line was suspended from this nick. Judgment was exercised to decide whether this line truly divided the pattern, and, if not, the extent of the divergence. The target lies as nearly as possible 22 yards from the muzzle of the gun, and this range has always been found a convenient one for locating the position of the group. The bulk of the pellets lie well inside a 12-inch circle, the center of the charge being thus more easy to define than at longer distances, where the eye must cover more space and take account of considerable detail in order to form a general estimate of the charge as a whole.

Having thus satisfactorily settled the system of measurement to be adopted, the next question was the much more difficult one of producing cartridges with slanting top wads. At first it was supposed in all innocence that the only thing necessary was to push the wad in sideways on the top of the shot and turn the end of the case over, all the while assuming that the turnover would live obliquely the same as the wad. In the first place, the slanting wad showed a very decided inclination to allow the shot to spill out of the case when held horizontally for the turning-over process. This was due to the lack of proper fit which the oblique position entailed. However, now and then a wad held during the process of turning over, but great was the disappointment to find that the machine steadily insisted on ignoring the attempts which had been made to produce a bad result. As surely as the mouth of the case was advanced into the turning over tool, the wad was forced on to a level keel, so that the ultimate result never fell below the ordinary standard of loading. It then became apparent that the oblique turnover, with the incidental slanting wad, is the result of defects in the turnover machine. In the same way that every owner of a lathe takes great care that the back center shall be in true axial alignment with the rotating pulley and chuck, so the tool man in the cartridge loading shop must take particular notice to insure a similar standard in respect to the lathes used for making the turnover on sporting cartridges. While the ordinary lathe bed is a continuous piece of metal, with the various faces planed in align-

ment with one another, the cartridge turnover machine is frequently a very elementary contrivance from an engineering point of view, often comprising a wooden table top, into which the mechanical fittings are fastened by ordinary bolts or screws. Even if the alignment is true at ordinary times, the pressure exerted in working the machine is apt at the critical moment to throw the opposing parts out of alignment.

To produce these defects on the apparatus used at the shooting ground, the back end of the turnover machine was released from its proper foundation and a piece of packing was used to raise the back center nearly 1-16 inch out of line with the other end of the machine. Some beautiful examples of slanting turnovers and top wads were then at once produced, and the result was the same however the top wad was seated. Having thus produced ten cartridges with one side a measured 3-64 inch higher than the other, five shots were fired with the high side toward the right-hand side of the gun, and five with the high side on the left. It is immaterial, in view of the results, to discuss whether the shooting ought to be thrown one way or the other, according to the lie of the case in the chamber. Anyhow, the accompanying results show that no difference whatever was produced by the extremes of treatment adopted.

Experiments to determine the effect of a slanting turnover, one side being 3-64 inch higher than the other:

| Recoil as a<br>general test<br>of the cartridge. | Turnover<br>slanting to the | —22 yards target— |                     |
|--------------------------------------------------|-----------------------------|-------------------|---------------------|
|                                                  |                             | Pattern           | Position<br>of same |
| 1. 9.54-inch.....                                | Right                       | Medium            | Central             |
| 2. 9.48-inch.....                                | Right                       | Medium            | 2-inch left         |
| 3. 9.44-inch.....                                | Right                       | Medium            | Central             |
| 4. 9.10-inch.....                                | Right                       | Medium            | 1-inch left         |
| 5. 9.28-inch.....                                | Right                       | Open              | Central             |
| Av. 0.6-inch left                                |                             |                   |                     |
| 6. 9.18-inch.....                                | Left                        | Medium            | Central             |
| 7. 9.06-inch.....                                | Left                        | Medium            | 1-inch left         |
| 8. 9.44-inch.....                                | Left                        | Medium            | Central             |
| 9. 9.36-inch.....                                | Left                        | Medium            | 1-inch left         |
| 10. 9.40-inch.....                               | Left                        | Medium            | 1-inch left         |
| Av. 9.33-inch                                    |                             |                   |                     |
| Av. 0.6-inch left                                |                             |                   |                     |

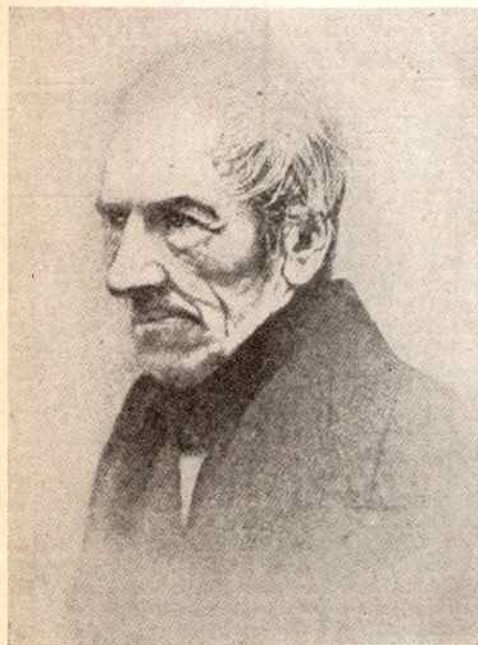
It is, of course, quite obvious, now we know the answer, that once the charge of shot gets into the barrel it takes its own level and follows a true course, uninfluenced by the lie of the wads in the case. On the other hand, there must be no doubt in the mind of the shooter that a slanting top wad, whether it does harm or not, is evidence of defective and careless loading. The cause has now been so satisfactorily demonstrated, examples of it should be promptly eliminated as soon as the defect develops. So many of the irregular results obtained in shooting are due to obscure causes which defy the ordinary processes of analysis that nothing on the face of it wrong should ever be sanctioned, even though experiments may suggest that no noticeable effect is produced. A slanting turnover no doubt detracts from the general efficiency of the cartridge, apart from its lack of eyeableness, but the theory that it throws the charge in the direction of the slant is apparently untenable.—*The Field* (London).



# THE REVOLUTION IN FIRE ARMS

(From The London Graphic)

IN the year 1805 the Rev. Alexander John Forsyth, the minister of the bleak Aberdeenshire parish of Belhelvie—where a treacherous rock called the Black Dog has made the coast a terror to mariners—revolutionized fire arms by inventing the percussion lock. The invention was so momentous that Napoleon offered the minister £20,000 for it, but he declined. Instead, he took it to the British Government, which gave him a room in the Tower where he could carry on his experiments. After twelve months of hard work he was requested by the Ministry (which had changed) to remove himself and his "rubbish" from the Tower. He had the utmost difficulty in getting his actual expenses repaid; he had to wait twenty-seven years before his invention was tested at Woolwich, thirty-two before a regiment was armed with it, thirty-four before it was used in war, while he has had to wait till 1909 for a separate and accurate biography, which now comes from the pen of his proud grand-nephew, Major-General Sir Alexander John Forsyth Reid, K.C.B., Colonel of the 29th Punjabis, who has just published a most valuable (privately printed) little book on this pioneer.



THE REV. ALEXANDER JOHN FORSYTH, L.L.D.,  
(1768-1843) INVENTOR OF THE PERCUSSION CAP

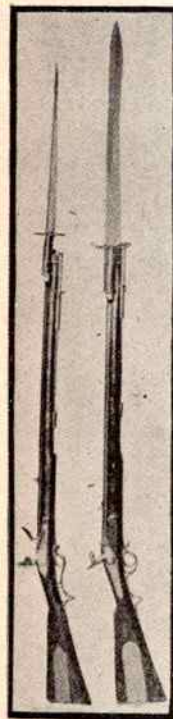
Forsyth was the son of the parish minister of Belhelvie, and was born in the manse there on December 28, 1768, dying there in 1843. Educated at the University of Aberdeen, he varied his ministerial tasks by the study of chemistry and mechanics, and his attention was called to the mechanism of fire arms when shooting wild-fowl on a loch near the manse. He noticed that many birds escaped his bag by diving the moment they saw the flash from his flint fowling-piece. He obviated this by covering the lock with a side-head, a primitive device that may be said to have developed afterwards in to the percussion lock. Forsyth made his first percussion gun in 1805, and took out a patent in July, 1807, the specification being drawn up with the assistance of James Watt. A partnership was arranged, and under the superintendence of a practical gun-maker a place of business was opened at 10, Piccadilly, Forsyth being connected with it until 1819.

It is interesting to know that Lord Cromer's father, a great sportsman, was one of the first to recognize the value of the gun, which was expensive. The Ordnance Department was in strong opposition. The oldest flint-lock in the Tower has the date 1614. But the authorities considered that weapon quite good enough, so that even in 1842 the musket with which the heroic defence of Jellalabad was conducted differed in no essential particular from that with which Blenheim was fought in 1704. The percussion-lock was first used in the field of battle during the first Chinese War by the 2d Battalion Border Regiment at the capture of Amoy in 1841. General Sir Alexander Reid points out that it is not too much to say that if Dr. Forsyth had been allowed to complete the few things he was engaged on at the Tower in 1807 instead of being told "to remove his rubbish," Wellington might have found the Peninsula and Waterloo easier than he did. "Or, to put it in another way, if Forsyth had not patriotically refused the £20,000 offered him by the French for his invention, Napoleon might not have died a prisoner at St. Helena."

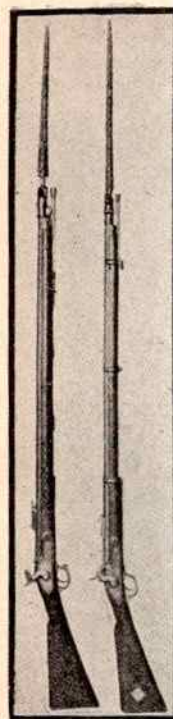
Although it is little more than a century since the introduction of the rifle into the British Army it is my no means entirely a modern invention. The principle of rifling the barrel to secure greater accuracy in shooting was known as early as 1563, for there is extant a Swiss decree prohibiting the use of grooves in the chambers of guns, for certain shooting competitions of the period. But nearly 200 years elapsed ere the rifle figured as a weapon of our Army, although much used in sport.

An improvement was effected in the Brunswick rifle adopted in 1836; a bullet with grooves fitted corresponding grooves in the barrel. The percussion lock, also, was substituted for the flint and steel; this invention of Dr. Forsyth made

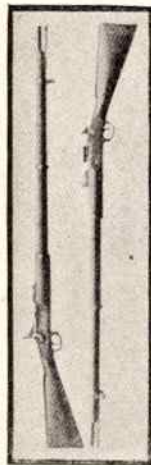




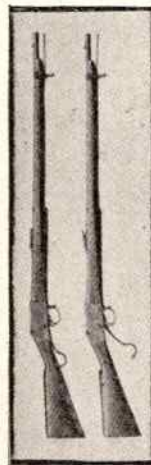
The Baker (1800) and the Brunswick (1836)



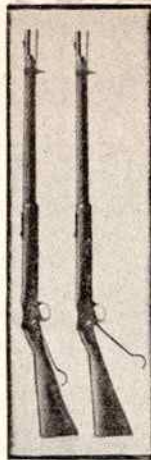
The Minie (1851) and the Enfield (1853)



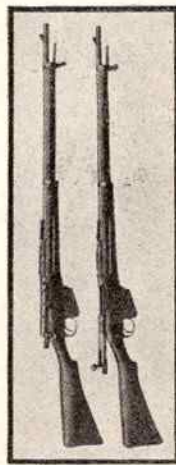
The Snider (1866)



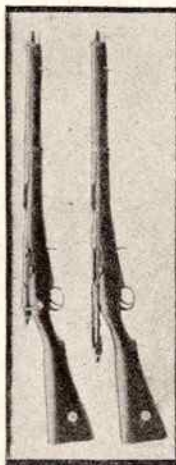
The Martini-Henry (1871)



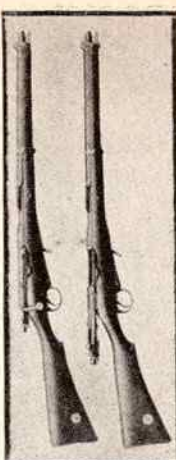
The Enfield-Martini (1880)



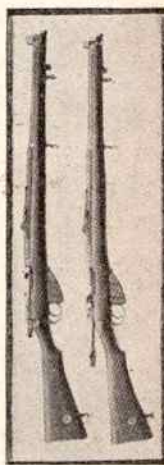
Rifle, Magazine Lee-Metford (1891)



Carbine, Magazine Lee-Metford for Cavalry (1894)



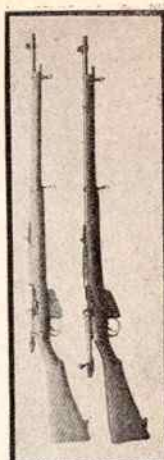
Carbine, Magazine Lee-Enfield for Cavalry (1896)



Rifle, Short Magazine Lee-Enfield (1903)



Rifle, Short Magazine Lee-Enfield (1907)



Rifle, Charger-loading Magazine, Lee-Enfield (1907)

The evolution of the military rifle from the Brown Bess to the Brown Bess to the arm of precision in use today has perhaps altered the history of warfare during the past century more than any other agency. The illustrations on this page chronologically trace its career since the adoption of the Baker by the rifle brigade in 1800. Such wonderful strides have been made towards its perfection that, whereas a little more than a century ago the range was only 200 yards, the present-day Lee-Enfield is sighted to 2800 yards, and is by no means powerless at a distance of three miles.



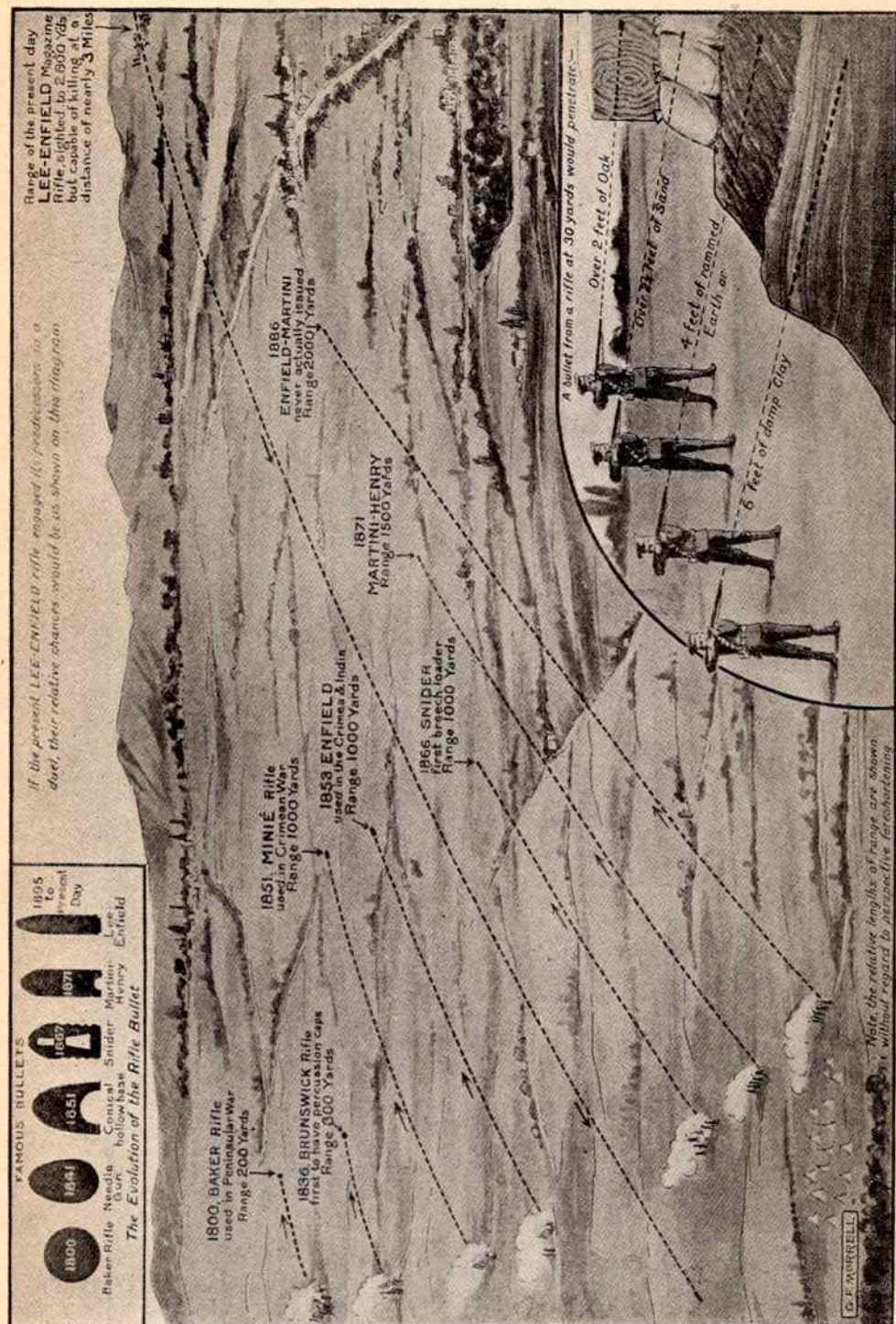


DIAGRAM SHOWING THE RANGE OF THE RIFLES USED IN THE BRITISH ARMY FROM THE BEGINNING OF THE EIGHTEENTH CENTURY TO THE PRESENT DAY



breech-loading and all subsequent improvements possible. In consequence, the breech-loading needle-gun was introduced into the Prussian Army in 1841, although no appreciable improvement followed in this country, beyond a number of Lancaster rifles of 900 yards range being supplied for service in the Kaffir War of 1846-52.

Attention is now given to experimenting with various bullets to facilitate loading, and finally a pointed bullet with a flat hollowed base, which expanded into the rifling on being fired, solved the question, Captain Minie's expanding bullet making loading as easy as with the old musket. In 1851 the "English Minie" rifle was introduced, and "Brown Bess" passed into the category of famous historical weapons.

Meanwhile it had been decided to arm *all* the troops with the rifle. For this purpose the long Enfield was adopted in 1853, and served out in 1855, replacing the Minie in the Crimea; later on the short Enfield was provided for the cavalry and artillery.

In the sixties the successes of the Prussian needle-gun had demonstrated the need for a breech-loader without delay, and Mr. Snider's invention enabled the old Enfields to be speedily converted into breech-loaders in 1866; two years later these served in the Abyssinian campaign.

This temporary arrangement was soon terminated by the adoption of the Martini-Henry breech-loader in 1871, the rifle of the Afghan, South African, and Egyptian campaigns, its violent "kick" being remembered by many a veteran.

A great advance was now made by Germany, in 1884, converting her Mauser into a magazine rifle—the Winchester repeater, used so effectively against the Russians, by the Turks, six years previously, had been a step in this direction. Smokeless powder was also invented in 1885, providing greater velocity and less fouling.

Extensive experiments were now made. The new Enfield-Martini rifle of 1886 was withheld from the troops, and in 1891 the first Lee-*Metford* magazine rifles were served. These had the Lee bolt and magazine, holding eight cartridges, combined with the *Metford* rifling, and an effective range of nearly 3000 yards, but improvements continued. Cordite cartridges appeared in 1892; the Enfield rifling replaced the *Metford* in 1896, and so we have the first Lee-Enfield, which, with few modifications, is the present-day service rifle, carrying ten cartridges, capable of firing twenty shots a minute.



THE INVENTOR OF THE NEEDLE-GUN

This memorial to Johann Nikolaus von Dreyse—the work of Professor Wandschneider of Berlin—was unveiled at his birth-place, Soemmerda, near Erfurt, at the end of November. It shows the inventor explaining the working of his gun to a Prussian soldier. Von Dreyse invented the breech-loading needle-gun in 1836. It was adopted by the Prussian Army in 1841.

Inventors have been seeking to perfect this rifle still further, so that it will reload itself automatically; either the *force of recoil* or the *compressed gas* generated in firing is to constitute the motive power, and the soldier will simply have to take aim, press the trigger as fast as required, and occasionally drop a refill of cartridges into the magazine.

Mr. Maxim has already utilized the compressed gas in his "Silencer," an invention which, he states, will render the shooting noiseless, and almost completely do away with the recoil.





# A NOVEL AID TO WING SHOOTING

THE correct principle of sighting shoulder guns has received more attention within the past few years, than for the long period of time since the invention of powder burning arms. Marksmen have at last come to realize that much of their success is due to improved methods of sighting. The very best weapon not properly sighted is but a poor one, and no great advantage can be gained from the use of a high grade arm if the system of sighting adapted does not bring out the best shooting qualities of the weapon. A scientific study of military rifles disclosed the fact that in order to get the best results and bring out the full ballistic possibilities of this class of arms it was necessary to devise and adapt a system of sights that would automatically correct the drift of the bullet from the direct line of sight. To this was added a wind gauge that would enable the marksman to make the proper allowance for winds of varying degrees of strength and velocity, and to systematically hit targets moving at different angles, across the line of sight by aiming directly at them. What the modern military sight is to the rifle the "Leader Wing Shooting Gun Sight" is to the shotgun. It is a simple little device consisting of two parts easily attached to any make of shotgun. The rear sight is a heart shaped opening through which the shooter keeps his bird or target in line. The muzzle sight is a bow shaped appliance. The proper use of which determines the lead necessary

to intercept the game or target; both parts are made of phosphor bronze, oxidized to match the gun barrel. It is a common fault of trap and game shooters, to raise the head at the instant of firing in an endeavor to see the object of aim more clearly. The result is, that only the front sight is visible and it is impossible to tell whether the barrel is parallel with the line of sight, and overshooting is the result. With the heart shaped rear sight of the "Leader Wing Shooting Gun Sight" system, this error could not occur as it would be immediately detected. Thus any uncertainty as to elevation is permanently eliminated. The bow-shaped muzzle appliance is provided with three sights. One at each end and one at the center. The lead for shots from right and left and for targets or game of varying velocity of flight, is determined by the position of the bow-shaped muzzle sight on the barrel; for game birds of slow flight such as quail and doves, the sight is placed near the muzzle; for those of more rapid flight like mallards and black duck, the sight is moved further back; for wood duck, widgeon or sprig tails the sight radius is still further reduced and for the air splitters and skyscrapers, like canvas-back, red-head, and teal, for which game the limit of lead is required, the front sight may be placed far enough back to enable the hunter to hold squarely on the game up to the limit of modern shotgun range.

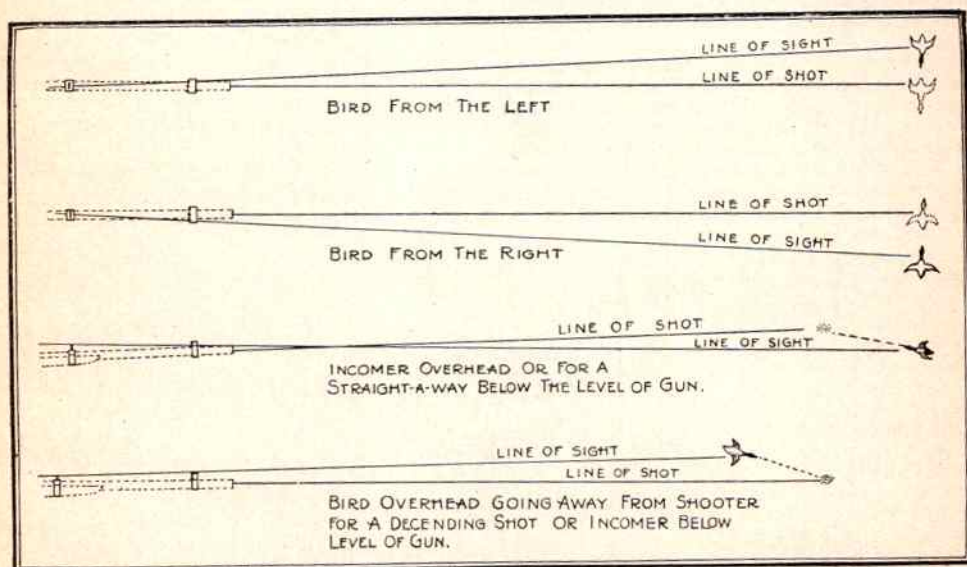


DIAGRAM SHOWING THE EFFECT OF THE SIGHT IN SHOOTING



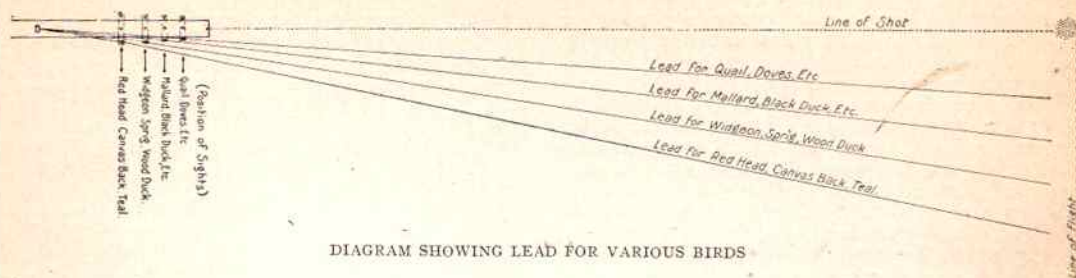


DIAGRAM SHOWING LEAD FOR VARIOUS BIRDS

By availing oneself of the peculiar form of the rear sight, the front sight of the gun, and the center sight of muzzle attachment, it is easy to make quick calculation for every angle of incoming shots overhead, or straight-away shots below the level of the gun.

When shooting at targets thrown from a trap, where a uniform speed and angle of flight is maintained, it would seem as though it would be possible to reduce the sport of trap shooting to a mathematical certainty. When using the Leader sight

for game shooting, when the average speed of flight of the game to be shot at is known, the muzzle sight may be placed at the proper mark, aim taken directly at the bird and the arrangement of the sights will automatically direct the shot along the proper angle to intercept the bird. From the beginning the novice who uses the Leader Wing Shooting Gun Sight may enjoy the success of the veteran marksman who has been shooting for years. For further information in regard to this novel invention write The Leader Company, No. 320 Market Street, San Francisco, Cal.

## ANSWERS TO CORRESPONDENTS

### THE PRONE POSITION

EDITOR GUN DEPARTMENT: In an article by Chas. Askins in your issue of February I note that he is amused, visitated, and almost winds up with a brain storm over the fact that the dignified American nation is about to get down on its stomach and shoot a match at 75 feet indoors with our brothers across the pond. Let us look into the matter a little further before we condemn this match, and the National Rifle Association for its acceptance. England, on account of its location in proximity to other European nations having compulsory military service and immense standing armies, is doing its best to interest its citizens in rifle practice, from the school boy clubs, with the miniature rifle, to the more advanced clubs, with the service arm, figuring, no doubt, that in time of national danger one man who knows his gun and can shoot straight is worth about ten who shut their eyes when they pull the trigger and are about as much afraid of the recoil of their own gun as of the enemy in front. The prone position being the steadiest for long range shooting, is the one most encouraged for long range and military firing. When the proposition of a match was made by our English friends last year, the National Rifle Association, probably as a matter of courtesy and a desire to increase interest in rifle shooting in this country, accepted. The result was that we were pretty badly beaten; not that we expected to win, but we thought we would make them go some. And did we want another match? Ask any of the men that shot on the team. The beat-

ing will do us good. We have been jollyng ourselves with the thought that we are a nation of riflemen, a delusion handed down from the days when Daniel Boone and his neighbors evaded the beef trust by supplying their larders through the accuracy of their Kentucky rifles. As to the caliber of the riflemen who would shoot in such a match and did not consider it a loss of reputation, I would refer Mr. Askins to the names of Lieut. Col. Tewes, Capt. Laudensack, Chesley, Itel, and a score of others well known wherever the rifle is shot in this country. This year the number competing for places on the team will likely be increased fourfold, showing an increase in interest and a corresponding improvement in the shooting game. Anything tending to increase the interest in rifle shooting in this country is to be commended, as the game of late years has been sadly neglected. This is not intended to cast any reflections on the many excellent organizations existing throughout the country, but applies to the large body of our citizens who know about as much about the proper handling of a rifle as they do about a machine gun. The National Rifle Association is doing a good work and one for which many riflemen of this country are deeply grateful, having already obtained for us the privilege of purchasing the military arm and ammunition from the government at cost, and secured the use of many military ranges for civilian practice. As to the violation of the ethics taught by A. C. Gould, I do not see the point. Did he advocate the use of 12 to 16 pounds .22 caliber Schuetzen-



rifles fitted with palm rests, set triggers, spur finger levers and the other refinements which are in general use wherever indoor shooting is practiced in this country? I would like to say that I have no personal ax to grind, as I did not have the honor of being a member of last year's team, but merely desire to see this match brought before the shooting fraternity in its true light. If, after the match has been shot, there should lurk in the minds of any of the critics a suspicion that the team was composed of the checked trousers, spat, and monocle variety, I have no doubt he or they could easily arrange a match, standing up man fashion, and show the said variety up in its proper light. I would say, in conclusion, that to my mind any matches that will increase public interest in shooting are to be commended. Get together—don't knock, boost the shooting game—it needs it.

Yours,

E. A. WANGAMAN.

Fort Pitt Rifle Club.

### \* THE .22 AUTO PISTOL

EDITOR GUN DEPARTMENT: On page 57 of the January number of "The Outer's Book" you give a very interesting description of a proposed new .22 caliber automatic pistol and I wish to enquire if it really will be made and placed on sale and when? That model as described strikes me as being pretty near perfect. Above all things I like a pistol with a prompt easy trigger pull.

LEONARD CARLETON.

[The .22 caliber automatic pistol described on page 57 of the January number of the Outer's Book is the invention of one of our contributors, a very practical man. He has promised to give us an article on the .22 caliber automatic pistol as outlined in the January number, which will be illustrated with excellent drawings. I cannot say at present when a .22 caliber automatic pistol suitable for practical use will be produced, and placed on the market but the demand is growing and it will come eventually. Every request from shooting men for such an arm is a boost for the new gun. It is extremely gratifying to note the interest shown by sportsmen in every part of the country in regard to the proposed .22 caliber auto-pistol.—R. A. K.]

### REVOLVER CARTRIDGES

EDITOR GUN DEPARTMENT: Will you kindly tell me how the .38 Colt and the .32 Winchester compare as revolver cartridges, and why? Yours,

JOHN J. TALLANT.

[There are so many different cartridges of the calibers named by you, adapted to revolvers that it would be difficult to answer your query unless you are more specific. If you refer to the .38 long Colt cartridge as adapted to the army special revolver, it carries nineteen grains powder and 150 grains lead, as made by the Winchester Company. The .32 Winchester cartridge carries 20 grains powder and 115 grains lead. The .38 S. & W. special cartridge is superior to either as a revolver cartridge as it carries 21 grains powder and 158 grains lead. The .32-20-115 Winchester

cartridge is very popular throughout the West and is powerful and accurate. The .38-40 is sometimes used in revolvers but most people prefer the regular .44-40-200 for frontier work.—R. A. K.]

### THE DALY GUNS

EDITOR GUN DEPARTMENT: I would like to ask you a few questions in regard to the Charles Daly rifle and shot gun combined, as sold by the Schoverling, Daly & Gales Company of New York. Is this arm well made and properly assembled, so that accuracy from both shot and rifle barrel may be expected. The gun is made in .30-30 and .38-55 caliber for rifle barrels and 16 and 12-gauge for the shotgun. What combination of shot and rifle barrel would you advise and consider the best for shooting ducks, wild turkeys and deer. Would you advise me to purchase such an arm for use as an all-around fire arm, for all kinds of game. The price at which the gun is sold, \$50.00, is rather high and I want to be sure of the quality of the gun before I buy one. Kindly give me your opinion in the next issue of the Outer's Book.

Yours truly,

HENRY E. FISCHER.

You will find the material and workmanship of the Charles Daly combined shotgun and rifle all that is claimed for them by the makers, who have for many years been classed among the best manufacturers of high grade arms, both at home and abroad. Among my friends is a sportsman who for many years has been using a Charles Daly, three-barrel gun. It is a 12-gauge, right barrel modified, left barrel full choke, rifle barrel takes the .38-35 Ballard cartridge. The owner of this gun is a famous shotgun expert at the traps, and in the field, and a rifleman of national reputation. He uses his three barrel Daly exclusively for all his wing shooting and meets the German sharpshooters with their heavy Schuetzen rifles, on equal terms. I mention this merely to show you that the three barrel and the combined two-barrel shot and rifle types are practical all around guns, although essentially a hunter's arm. For the kind of work which you have outlined I would suggest a 12-gauge shot barrel, full choke and a .30-30 rifle barrel. You can shoot buck shot in the full choke barrel by selecting a size that will chamber loosely when three are placed side by side in the choke. When loaded in this manner there is no danger of gorging, or spreading the choke.

There may be differences of opinion in regard to the type of arm most suitable for one's purpose. This every man must finally decide for himself. There can, however, be no difference of opinion in regard to the quality of the Charles Daly guns.—R. A. K.]

### ON SMALL RIFLE WORK

EDITOR GUN DEPARTMENT: I note on page 188 of the February issue, the request of a Mr. J. H. Fitzgerald for information concerning .22 caliber rifle work. The correspondent may be interested to know that there is such a book in print and it is called *Miniature Rifle Shooting* and is written by one of the foremost English experts of to-day, Mr. L. R. Tippins.



It is published by Sampson Low, Marston & Co., Fettes Lane Fleet Street, London, E. C. It is absolutely the best thing of its kind in print today and it retails for about fifty cents in England but would cost a little more when imported. It can be ordered through any good book seller and I secured mine in that way. It covers practically every detail of the subject and is exceedingly interesting reading.

Of course, being written from the English point of view it does not regard our American rifles as incapable of improvement, but it says very frankly that there is no ammunition made today that can compare with the American .22 caliber cartridges. I might add that the same author has recently put out a large work on "Modern Rifle Shooting" which is the fullest and most sensible publication of its kind that I know of today and which deals with the larger calibers, longer distances, etc., Yours truly,

PAUL B. JENKINS.

### SIZE OF CARTRIDGES

EDITOR GUN DEPARTMENT: In the January Outer's Book, you, in answer to Mr. Wallace's query as to the meaning of the compound calibers such as .30-30, .32-40 and .38-55, etc., say: "A few years ago, before smokeless powder came into general use, it was customary to describe cartridges by naming the caliber first, then the number of grains of powder used and last in order, the weight of the bullet. Thus a .45-70-500 cartridge would be .45 caliber containing 70 grains of powder and 500 grains of lead. The figures .32-40-165 describes a cartridge of .32 caliber containing 40 grains of powder and a 165-grain bullet. Now I would like to ask you a question. If the .38-40 W. C. F. rifle cartridge, such as is used in Winchester, Marlin and other repeating rifles, is a cartridge of .38 caliber containing 40 grains of powder why is this cartridge of larger size than the .38 S. & W. cartridge? Please explain. Yours very truly,

W. J. ERICKSON.

[The reason for the variations in caliber of certain bullets from actual diameter are many. Two of the notable examples of variations from actual caliber are the .44-40-200 and .38-40-180 W. C. F. cartridges. When these cartridges were designed, the standards of caliber among American armors were not definitely established. The manufacturer of a new rifle made it according to his own ideas, and others who wished to make ammunition for it were compelled to accept the original maker's specifications. In the boring of rifles some makers favored the bore diameter and others the groove diameter. The former is determined by the diameter of the bore before it is rifled, the latter by measurements including the depth of the grooves from opposite sides of the bore. The rifling of black powder arms was usually about five thousands of an inch deep. The actual caliber of the so-called .38-40-180 W. C. F. is .400 calibers, while the .44-40-200 is about .424 calibers. The advent of new manufacturers in the field brought cartridges like the .38-55 and the .32-40; these were later productions and in accordance with improving methods of gun building, were made closer to gauge. The .38-55 is .375 caliber, and

the .32-40 is .319 caliber, which is the standard of the Winchester, Marlin, Remington, Savage, etc. The S. & W. .38 is a revolver cartridge and takes a bullet .358 in diameter. The S. & W. people designed this bullet for use in their military revolver. To still further complicate calibers, some of the bullets were of two calibers, the base being made to fit the mouth of the shell and the body of the bullet enlarged to fit the rifling. Others were made so small that they could be readily dropped through the barrel, in this instance the bullets were made with a hollow base which under the pressure of the powder would expand to fit the grooves. Another complication was caused by the change of the older cartridges from outside to inside lubrication and from rim to center fire. In some instances the bullets were made inside shell diameter and others were made groove diameter with base reduced to permit of a short crimp to hold the bullet. In some of the latter cartridges a "heel" or hollow base bullet is used. I am inclined to think that in the earlier days, without established standards, much was left to chance in determining the exact size of the bore. At the present time great care is being exercised by all armors, and a specified caliber by a reliable armorer comes near being what its figures in thousands denote.—R. A. K.]

### THE MAUSER'S WORK

EDITOR GUN DEPARTMENT: The Sauer-Mauser rifle chambered for the .30 U. S. G. '06, as described by Mr. Glasgow in the February Outer's Book, would suit me better than any rifle I know of. I used this Mauser in the 9 m.m. caliber, 20-inch barrel, and anyone looking for an exceedingly accurate, light, well-balanced and powerful rifle can make no mistake in getting the Sauer-Mauser 9 m.m. The arm is finely finished, made of the best materials and very simple throughout. The bolt action is perhaps somewhat slower than the lever, but I find it quick enough, as a rule, and the rifle balances so nicely that the sights come right into line instantly and no time is lost in getting in a shot after the rifle is loaded, while with most of the lever actions I have used, it takes me longer to find the sights, although I could work the magazine faster, so really I find in actual use one is about as quick as the other for me. I use nothing but the German ammunition and find it much more powerful than the American make. The cartridge I use is loaded with a 248.5 grain bullet; velocity at 50 feet, 2135 foot-seconds; energy, 2516 foot-pounds. Have used some cartridges loaded with the 280 grains bullet which showed remarkable penetration and shocking effect. I fired one of these soft points through a piece of soft steel plate 11-16 inches thick and the ball passed clear through and fragments of the bullet were buried in a tree behind. I never have had a chance to try this rifle on any game larger than deer, but of the several I have killed they never any one of them went over twenty yards after being hit, and usually they tumbled right over and stayed there. Late one afternoon a friend and I were walking down an old logging road that had become pretty well brushed up with second growth maples, windfalls, etc., making it



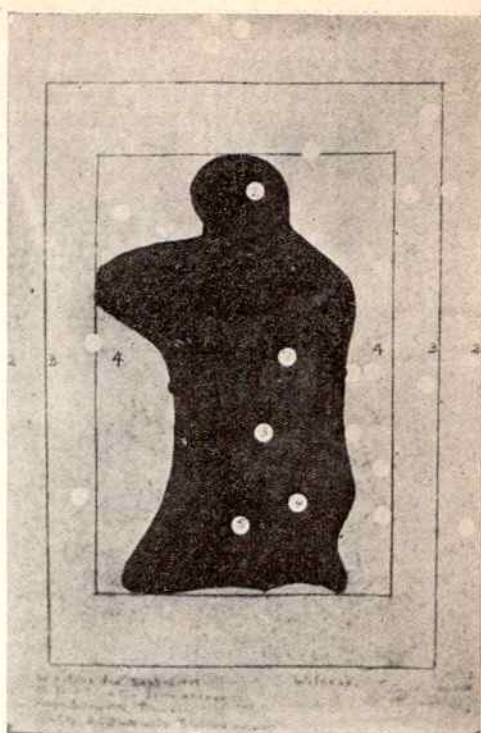
impossible to see ahead but a little way. I was walking behind with the rifle locked when a spike horn buck jumped across the road about twenty-five yards ahead. The fellow in front was looking on the ground for fresh signs and didn't see the deer until I fired. He looked just in time to see the buck go down with a 9 m.m. through his neck. I caught sight of him just as he landed in the middle of the road and didn't have but an instant to throw over the safety and fire before he would have been out of sight. He was struck while in mid-air and landed on his back with his horns driven in the ground clear to the skull. In a case of this kind the Sauer-Mausers is not found wanting. If I had been obliged to fumble around with a poorly balanced rifle and hunt for my sights, I never would have had time to fire a shot. I have used the Mannlicher-Haenel rifle in 7 and 9 m.m. and think it a fine rifle, but prefer the Mauser bolt mechanism, as it is more easily taken apart. The Haenel-Mannlicher is supplied with a key to assist in taking apart the bolt, but with the Mauser the bolt can be taken all to pieces with but just your fingers.

Of the Winchesters I have used I like the .33 best. It would suit me better if it were chambered for the '06 government cartridge. The set trigger as furnished on the Mauser and Mannlicher rifles I find very convenient. I use it only occasionally on long range shots. It is not in the way, I find, and is handy to have.

I used the Luger 9 m.m. one season and liked it quite well. I did not give it much of a try out as I fired only about 350 shots. The only fault I can find with it is that the empty shell occasionally is not flipped out in time to prevent the breech bolt closing on same, causing a jam. This does not cause much delay to rectify and as it happened only four times out of the 350 shots fired it is nothing so very serious. I fired one of the Germany factory cartridges with hollow point metal patched bullet into the end of a dry cedar block and it penetrated  $13\frac{1}{4}$  inches. The ball did not expand and I find it does not on anything softer than very hard wood. I like the .44-40  $5\frac{1}{4}$ -inch Colt S. A. Frontier about as well as any belt gun I have ever used and I have recently purchased one of that description with hand finished action and targeted at factory to shoot center at 20 yards. It certainly does too, if I hold right. Yours, FRANK E. PRESCOTT.

### THE STANDARD ACTION

EDITOR GUN DEPARTMENT: I have been one of the large number of sportsmen to read with great deal of pleasure the articles of Messrs. Crossman and Newton, relative to the bolt and lever actions. I don't think that any one could have read these articles and not felt at the end that he was just a little bit better posted regarding sporting rifles; no matter what his opinion regarding the action. But with all this there is one action that I favor most of all, and as yet I have read no mention of it in your department. This is the new "Standard Automatic." Last fall I had the pleasure of shooting quite a bit with a Standard .30-30 at our range at Whiting, Indiana. I don't think that I exaggerate when I say that the action can justify



A FIVE-SHOT STRING

any claims made for it no matter how extravagant they may sound. I tried it out at the regulation eight-inch bull at two hundred yards, at blue-rocks throw nat twenty feet rise, and at the kneeling figure silhouette (target F) used in military shooting. In each instance it proved itself an arm of exceptional merit, both for accuracy and extreme rapidity of fire. In any gun of equal power that I have shot there has been considerable time lost between shots to recover aim. This feature is noticeably absent in the Standard .30-30; and, I am told, equally so in the .35 they are shortly to put on the market.

Now, it seems to me that accurate rapidity of fire, though it may not be of advantage on one hunting trip in a hundred, when it is needed will prove a life-saver. Consider a mountain lion about to spring, or a wounded bear at short range; fractions of a second may mean a fine skin and a good story, or a short notice in the obituary column. I, for one, prefer the former. Or it may be that two shots will bring down your buck in thick brush hunting; where one, before he is lost to sight, means a mile or so of trailing over logs and underbrush, and as much further back to camp. Now I know that Mr. Blank can shoot a lever gun as fast and accurately as can possibly be needed. And Mr. Soandso can use a bolt action as fast as any one can recover from the recoil. But, who are these men? They are experts in their line, and have spent years in learning their particular type of arm. Now, if I may become personal for a moment; I am distinctly not an expert, but



just an average shooter who picks up a gun now and then for sport, or spends a few hours in the week at the targets. That is all I have time for. And of all the guns I have ever used the Standard comes nearest to eliminating the personal equation and stays nearest the object aimed at. This is, I think, due to the remarkable lack of recoil, and exceptionally smooth automatic action. The blue-rocks I spoke of were five, thrown in the air in as many seconds, and broken with ridiculous ease. I am enclosing, also, a photo of a five-shot string on the silhouette, two hundred yards off-hand, fired in six seconds; which is considerably faster than the average shooter, myself included in this class, could aim and fire a hand functioned arm of equal power.

It seems to me that the "automatics" have not had their share of attention in your department. I think we would all welcome some of the opinions of brother sportsmen, who have had practical hunting experience with the automatic rifles now on the market. Sincerely yours,

ASHLEY C. DIXON.

### WOULD CONVERT NEW SERVICE

EDITOR GUN DEPARTMENT: I have read with a great deal of interest the Crossman-Newton letters in your most interesting department. I shoot a .30 United States Army Winchester on big game. I have shot it for ten years and it has never bucked in any way. I merely state the above for what it is worth and hasten to express the hope that Mr. Crossman will not open up on me. What I really want to say is that I would like to see our new service rifle put on the market in the shape of a sporting weapon. The Lord himself must know that we are in need of such a gun. It should be made of the best material and finely finished. There is no doubt but that such a weapon would command a sale worth the while.

Yours,  
J. A. BOTTKOL.

### WOODEN vs. BRASS RODS

EDITOR GUN DEPARTMENT: Will you answer through the columns of the Outer's Book the following questions:

1. On page 187 of the February number you state that if a steel or brass rod instead of a hickory rod be used to clean rifles, muzzle wear will be reduced to a minimum. I have always used, and believe that the proper way to clean a rifle barrel is to use a cloth over the end of a hickory rod notched back about  $\frac{1}{4}$  inch from the end to hold the cloth so, that it can be worked up and down near the breech. I can say of my own rifles that they show no signs of rust at least, although they may be worn, as I have no means of making accurate measurements. Will you be good enough to explain wherein I am wrong in method.

2. How are rifle barrels vented and what advantage is claimed for vented barrels, and please explain the theory on which vented barrels work.

3. What is the pitch of the Savage 1903 rifle chambered for .22 long rifle and when chambered for the .22 short only.

4. Is the .32-40 Savage standard diameter to bottom of rifling .321 or .319.

Thanking you in advance for the information, I am, Yours very truly,  
L. E. PERRY.

[Your method of cleaning your rifle is, of course, effective and time honored, but it is the method used by our fathers, before the advent of the small bore rifle which is bored and calibered to the ten thousandth part of an inch. We have changed our ideas somewhat in regard to the proper method and appliances for cleaning our carefully made modern arms. In former days, few riflemen knew the exact caliber in thousands of an inch of their rifles, and slight variations caused by wear of the bullet or wiping rod made but little difference, as the bullet mould which accompanied each arm could easily be enlarged to compensate for the wear of the bore. Even this was seldom necessary as the soft lead of which the bullets were then made would upset to fill the bore. The objection to a wooden wiping rod is that with continuous use it becomes saturated with oil and the grain of the wood thereby softened. In a short time dirt, sand, steel filings and emery dust becomes imbedded in the grain forming a rat-tail file that will soon destroy the finest muzzle. Not so with the steel or brass rod, which may be carefully wiped before using. A pull through on flexible field cleaner is objectionable for the same reasons as the wooden rod, and should never be used when dirty, and at no time should it be inserted from the breech. Lieut. Whelen in his excellent book "Suggestions to Military Riflemen, Revised Edition," says, "The expert shot prefers a steel rod, because experience proves that dirt will stick to the softer metal and cut into the harder." There is one chapter in Lieut. Whelen's book, on "The Care of The Rifle" that is worth many times the cost of the entire book and which should place the work in the hands of every one who loves a gun.

Rifle barrels are usually vented near the muzzle, although the system adopted, vary with individual ideas; some riflemen have had their rifles vented by cutting slots parallel with the bore. The method most generally approved is the one devised by Mr. Perry E. Kent of Utica, N. Y., which consists of a series of small holes drilled near the muzzle. These holes may vary in size and number. The arrangement of the holes run parallel to the twist of the rifling and enter the bore through the bottom of the grooves. The object of venting rifles is to reduce the blast of powder gases at the muzzle. It is maintained by those who favor the venting system that the bullet is unfavorably affected by the muzzle blast, after it has left the muzzle and is no longer supported and directed by the rifling. Results obtained by the Kent system of venting, and the Maxim silencer would indicate that there is much to support their claims. There is, however, still much to be learned in this connection. Dr. F. W. Mann in his new book, "The Bullet's Flight," has shown conclusively that any system of venting yet devised does not arrest the muzzle blast to any appreciable degree. Recent tests of the Maxim Silencer on the New Springfield rifle shows that a slight increase in elevation on the rear sight is required when the silencer is used. It was not definitely determined



whether the falling off in velocity was due to the sudden checking of the muzzle blast in the silencer, or to the additional weight of the silencer on the end of the barrel, which would have the effect of causing the barrel to shoot low. Until the benefits of venting rifle barrels is more clearly proven, I would think twice before I would mutilate a barrel of known accuracy.

The Savage model 1893 is made to take the .22 short, .22 long and .22 long rifle cartridges, the three lengths in one gun. I cannot say definitely what pitch of rifling the Savage people use in their model 1893. One turn in twenty inches is the standard for the .22 short and one in 16 for .22 long rifle. I think the quicker twist is adopted where the three lengths are used in one gun. The Savage .32-40 rifle is bored standard diameter .319 to bottom of the grooves; it is the same as the .32-40 Remington, Winchester, Marlin, Stevens and other American rifles.—R. A. K.]

### SHOOTING BUCK SHOT

EDITOR GUN DEPARTMENT: I want your advice about getting a high grade hammerless double shotgun with two sets of barrels, one pair cylinder bore for buckshot or round ball. Would it be necessary to have the barrels heavier than choke bore Damascus barrels. What size of buck shot chambers in a 12-gauge best and what would be your choice of material for the barrels intended for ball and buckshot. While hunting quail with a Remington self-loader, a short time ago, I stepped over a large log to see why my setter refused to advance, when to my consternation I almost stepped on a large black bear. I placed the log between him and myself again as quickly as possible. On reaching the other side, I turned my head and saw he was just in the act of reaching for me. I wheeled quickly and gave him a load of No. Y shot full in the face and then started to run, as I discovered that my gun was empty. I loaded as I ran, and when I had finished, turned, expecting to find the bear at my heels, but he was still standing near the log pawing the side of his face where I left him to get a rifle. Now if I had been using a double gun and had a few shells loaded with buck or ball I could have quickly changed loads and stood my ground.

What make of gun would you recommend for such work, and don't you think such a gun as I have described would be a good game getter. I had selected an L. C. Smith No. 2 or a Remington Grade B. E. What would be your choice and do you think the recoil from such loads would be excessive and spoil ones shooting. Would it be wise to have a sheard front sight and a Marble rear leaf sight on such barrels? Please reply through the correspondence department of the Outer's Book, as I am a constant reader. Yours, J. M. F.

[Your encounter with the black bear while quail hunting is not a common occurrence and might never happen to you again. Therefore, I would not consider it necessary or wise to make a heavy expenditure of money to meet such an emergency. In any event, an extra set of barrels cylinder bored for buck shot or round ball would be an unwarranted expense, as any barrel bored straight cylin-

der, full or modified choke, will handle buckshot or round ball successfully if properly loaded. To load buck shot for a shotgun of any bore, the size of the shot should be determined by actual measurement. My method is to place a card board wad in the barrel at the narrowest part of the choke; then select buck shot that will chamber loosely, three pellets side by side in the choke. Having thus determined the proper size of shot to use, load it in the shells by hand, placing it in courses of three shot to each course. The shells may be loaded to their holding capacity, leaving room for a stiff cardboard wad and a  $\frac{1}{4}$ -inch crimp, but I prefer a load of not less than 6 or more than 9 buckshot. The shot should be oiled with some heavy lubricating oil that will not evaporate. Oiling the shot will reduce friction on the walls of the barrel, giving a closer pattern and more uniform distribution. One of the best emergency loads, for a shotgun is a round, soft lead ball loaded into the regular paper shell. The ball should be small enough so that when covered with a thin buckskin or linen patch were lubricated it will push easily through the choke. It is best to try each separate ball for fit before loading them into the shells as the gauge of guns may vary. The patched balls may be secured in the shells by dropping a little melted tallow around the edge of the ball. No change in the weight of barrels is necessary to use buckshot or ball cartridges, and while a fine four blade Damascus barrel is beautiful to look at, the steel barrels used by the best known American manufacturers are stronger and less susceptible to injury. The shot guns turned out by any reliable American gun maker are sufficiently powerful for any reasonable demand which might be made on them. The proper round ball for use in a 12-gauge shotgun, if choke bored, is 14-gauge; it is .693 in diameter and weighs 465 grains. Driven with the regular charge of powder it has great shocking power, and is almost as accurate as a rifle in the hands of the average man up to 50 and 75 yards. An ideal weapon for your work would be a three-barrel gun. They may be had in 12- or 16-gauge shot barrels combined with .30-30 or .38-55 rifle barrels and weighing from 7 to 8 pounds. They are for sale by Shoverling, Daly & Gales, No. 302 and 304 Broadway, New York, and by the Royal Gun Company, Wheeling, W. Va. These arms are equipped with open rifle, and folding peep sights. The recoil from ball or buck cartridges would not be excessive and I would not consider rifle sights necessary on the cylinder bored barrels, as all shooting with such an arm would necessarily be at very limited range.—R. A. K.]

### KRAG AND SPRINGFIELD LENGTHS

EDITOR GUN DEPARTMENT: We have been having some discussion on the length of a Krag U. S. A. and an old Springfield U. S. A. Now what is the length of a Krag from butt to muzzle and what is the length of the Springfield from butt to muzzle? I mean the old Springfield, and how far will the Krag shoot on a level sight. Please answer and oblige, GEO. R. FOSTER.

[The Krag rifle is 49 inches in length from butt plate to muzzle, the barrel is 30 inches long. The



old .45-70 Springfield is  $52\frac{1}{2}$  inches over all and has a  $32\frac{1}{2}$ -inch barrel. These barrel measurements include the length of the chamber.

The Krag can be sighted point blank to any distance under the extreme limit of its range. With the battle sight, or with leaf folded down, adjustments may be made from one to four hundred yards; with the leaf sight vertical adjustments are possible at varying distances from 100 to 2000 yards. No rifle can be said to shoot perfectly level for any distance, as the influences of gravity is ever constant and begins to affect the bullet as soon as it emerges from the muzzle of the rifle.

If a Krag rifle were sighted perfectly level and fired while in that position the bullet would sink several inches, while traveling even the ordinary hunting distances. Point blank is merely a term in the vernacular of the rifleman to describe the point at which the bullet touches the line of sight when the sights are properly adjusted for that distance.—R. A. K.]

### CALIBER AND GAUGE

EDITOR GUN DEPARTMENT: Please answer the following questions through the columns of your department: What is the meaning of 10, 12, 16-gauge, etc., as applied to shotguns and how did this method of describing the bore originate. I have asked a great many sportsmen for information on this subject, and they say, "Oh, it is just the standard adopted for these sizes. Is the gauge of rifles expressed in inches? If not, please let me know what method is used.

H. M. A., Mish.

[The system in use to determine the gauge of shotguns was established early in the history of fire arms, before the invention of spiral rifling. The gauge of shot guns is based on the number of perfectly round lead balls required to weigh a pound, (avoirdupois), that will exactly fit the bore of the shotgun. Thus a 20-gauge shotgun is bored for a round ball that takes 20 of them to weigh a pound. A 16-gauge shotgun carries a round ball exactly one ounce in weight. A 12-gauge takes 12 round balls to the pound, etc.

In America the caliber of rifled arms is expressed in decimals of an inch. Thus a .22 caliber rifle measures .22-100 of an inch in bore diameter. A .50 caliber rifle measures 50-100 or half an inch in bore diameter. In most countries the caliber of rifles is expressed in Millimeters and fractions thereof. A 12-gauge shotgun measured according to the system used in measuring rifles would be .729 caliber or 18.6 millimeters.—R. A. K.]

### THE COLT .32 AND .38

EDITOR GUN DEPARTMENT: As a reader and subscriber of the Outer's Book, may I presume on your indulgence to answer some inquiries in regard to automatic pistols? I wish to purchase one and would ask you in what way a .38 caliber Colt (like the cut enclosed) would be a better pistol than a .32 caliber Colt. I think I would prefer the smaller (.32 caliber) and will appreciate any information you can give me on the subject.

Yours truly,

J. F. WELSH.

[The clipping from the Outer's Book which you enclose, is a cut of the .38 caliber Colt automatic pistol, pocket model. It is superior to the .32 caliber on account of its greater stopping power, an essential in a weapon carried for defense. The .38 caliber weighs 32 ounces, and, having been recently improved, has a shapely and convenient hammer enabling the first shot to be fired with a speed unsurpassed by any other arm. The .38 pocket gun can be had in a hammerless model, weighing 23 ounces which is also the weight of the .32 pocket model hammerless. The .38 and .32 hammerless have  $3\frac{1}{4}$ -inch barrels. The .38 hammerless pocket model has a 4 $\frac{1}{2}$ -inch barrel. The Colt Company also makes a .38 caliber military or belt gun with a 6-inch barrel weighing 38 ounces, and a .45 caliber with a 5-inch barrel weighing 33 $\frac{1}{2}$  ounces, both have outside hammers. On account of the marvelous fire speed of automatic pistols, that type of weapon is much more effective in the light calibers, than are the hand functioned arms. I would be pleased to advise you further if I can be of any service in aiding you to make your selection.—R. A. K.]

### TO OBTAIN CLAY BALLS

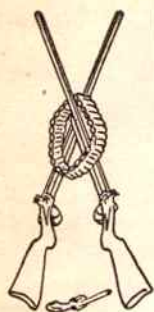
EDITOR GUN DEPARTMENT: Can you tell me where I can obtain a supply of hollow clay or composition balls, such as are used in the wild west shows and for the stage and other exhibition purposes? Should I fail in getting these, where can I obtain the moulds to make the hollow balls? Any information that you can give me in regard to this will be gratefully received.

A. D. STEVENS.

[You can get solid composition balls for snap shooting and exhibition purposes from the Chamberlain Cartridge Company, Cleveland, Ohio. They also make a trap to throw the balls. The Hindmarsh trap and Target Company, of Lincoln, Nebraska, may also be able to supply you with what you need in this line.

The composition balls used by Wild West shows and for stage shooting are very fragile and will not stand transportation. They are usually moulded as needed. The material of which they are made and the proportions used are as follows: 15 pounds pitch, 5 pounds whiting and 3 pounds lamp black. These proportions may be varied, to produce the desired color or decree of brittleness. I think it will be necessary to have the moulds made to order as I know of no dealer who carries them. Any good brass founder can make them. The moulds are made in two equal halves, hinged together on the side opposite the handle. The inside of the moulds should be turned out and polished perfectly smooth. In moulding the balls the material should be kept hot so that it will run freely, and the moulds dipped in cold water between each cast. A little more than enough material required to make the ball should be poured into the mould, then a circular turn must be given the mould to completely cover its interior and make a perfect ball, after which the surplus material is poured back into the melting pot.—R. A. K.]

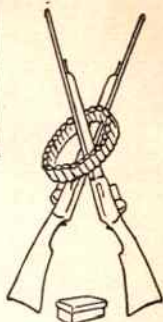




# GUNS AND AMMUNITION

EDITED BY ROBERT A. KANE

This department is intended to be a place for the exchange and discussion of views on any subject pertaining to arms and ammunition from which no one with an idea to advance shall be barred. The only conditions are that the opinion must not be manifestly absurd, that it be expressed in courteous language and that no personalities be indulged in. Each opinion is printed for what it is worth and its publication does not commit the editor to the view expressed. The widest range will be permitted and our readers are invited to make free use of these pages, but it is important to remember that *under no circumstances will personalities ever be permitted.*



## THE NEW ROSS RIFLE

PART III

By EDWARD C. CROSSMAN

**D**URING the trials of the Ross against the Lee-Enfield, about 1902, when it finally won out against the English arm, some speed tests were made part of the programme. These tests might be of interest to the readers of *Outer's Book*, as showing the class of the Ross against the common pattern of turn-bolt rifle.

The Ross was fired by a man from the factory. The Lee was handled by relays of expert soldiers.

In single fire standing, the Ross fired 49 rounds in 2 minutes 45 seconds with 22 bulls. The Lee took 3 minutes 46 seconds to fire 46 rounds with 11 bulls.

Single fire kneeling, the Ross fired 50 rounds in 2 minutes 52 seconds with 22 bulls. The Lee fired 38 rounds but took 3 minutes 44 seconds and got 2 bulls.

In single fire, prone, the Ross fired 48 rounds in 3 minutes 33 seconds with 23 bulls. The Lee fired 49 rounds in 4 minutes 13 seconds with 24 bulls.

In magazine fire, prone, the Ross fired 50 rounds in 1 minute 49 seconds with 11 hits. The Lee fired 46 rounds in 5 minutes 45 seconds with 17 hits.

In magazine fire, kneeling, the Ross fired 50 rounds in 1 minute 38 seconds with 10 hits. The Lee took 4 minutes 51 seconds to fire 50 rounds with 20 hits.

In magazine fire, standing, the Ross fired 47 rounds in 1 minute 34 seconds with 13 hits. The Lee fired 34 rounds in 4 minutes 27½ seconds with 4 hits.

All told the Ross fired 294 rounds in 12 minutes 51 seconds with 101 hits. The Lee fired 263 rounds in 25 minutes with 84 hits.

In the tests to take apart the two rifles, the Lee simply did not class either in time required or in number of tools needed.

As most gun-cranks and near-gun-cranks know, the Ross was chosen for the Canadian militia in preference to the Lee used by England. In 1906 over 15,000 Ross rifles had been turned over to the

Canadian Government to replace the Lees with which the Canadian forces were armed. The number in the hands of the Canadian militia at present I do not know.

The fight put up against Ross and his rifle in the Canadian legislative body was a merry one, the scrap lasting even after the rifle had been adopted. Those conservative by party and those who were unwilling to see changes made merely because they could not help being old foggyish, joined forces with those members influenced by the English rifle "Trust" headed by the brother of Joe Chamberlain. What the Ross didn't have said about in the way of hostile criticisms were the things that the fertile brains of the opposition could not think of—and they were not many. Between the "Trust" of England and the opposition party in the House of Commons who were "agin the Government" and made the Ross rifle one of the things to which they objected as a matter of principle, Ross had his work cut out. His rifle evidently made good in spite of the fight against it.

The spectacle of an English colony, throwing out the rifle of the English army, and adopting another type was a slap in the face from which the English War Office was a long time recovering.

Some of the earlier Ross rifles were unsatisfactory, both on account of the design on which the Canadian officials insisted and on account of new and therefore untrained workmen. Our own Savage rifle went through the same process in its earlier designs, before being brought up to its present state of perfection.

The Canadian militia use the .303 cartridge for the sake of uniformity with the English troops, and for a still better reason—because the .280 was not in existence at the time of the adoption of the rifle. For the Canadian trade, the Ross rifle is listed in but the two calibers—.303 British—practically the same as our own .30-40—and .280—the most up to date cartridge in existence. Chas. Lancaster,



the gun maker of London, lists the Ross in his catalogue as made for the .256—or  $6\frac{1}{4}$  m. m.—.280; .303; .350; and .370 calibers. In the first three sizes he asks from \$75.00 to \$100.00 and for the two large caliber Ross rifles the price is from \$100.00 to \$125.00.

The .303 cartridge is too well known to require any comment and the trajectory figures for the .30-40 will answer for the .303 British for all practical purposes. The Ross line of rifles includes but one model for the .280 cartridge, this being the \$70.00 Deer Stalking pattern. For the .303 British cartridge the Ross line includes the Model "R," sporting rifle of the same lines as the Deer Stalker, with Italian walnut stocks and good finish; the Model "E" of better quality, and two target rifles, the Mark 11, much like the Canadian military rifle and the Mark 111, the finest Ross target rifle. They range in price from \$25.00 to 45.00 and give the prospective purchaser his choice of a purely sporting rifle of light weight or a military target rifle of exactly the same build as the militia rifle and fitted with target sights.

We are not interested in the cartridges listed by Lancaster nor in the .303 British. The .280, being designed by Ross and being the most modern and the nearest to perfection of any cartridge in existence, is deserving of a little notice.

The case has the most exaggerated taper of any on the market, being larger at the rear end than our own huge New Springfield case. The normal charge is from 56 to 58 grains of Neonite powder—not unlike our own 1909 Dupont. Our New Springfield uses from 45 to 49 grains of about the same class of powder.

The bullets for this cartridge are many, ranging from the 180 grain, Spitzer, solid point, bullet, for match shooting to the light 140 grain hollow point hunting bullet. The list includes the bullets referred to, the 160 grain Spitzer match bullet, the 160 grain hollow point, the 140 grain hollow point—both of these being blunt nosed in shape—the 160 grain hollow, copper, Spitzer shaped point and its twin, the same bullet weighing 140 grains. The Spitzer bullets are too well known to need mention and the advantage possessed by this form of point as cutting down air resistance and therefore adding to the extreme range of the rifle is equally well known. The first Ross bullets were of the blunt nosed type, with hollow front—like some of our "Express" bullets of which the .45-330 Gould is an example. The Ross were of course metal

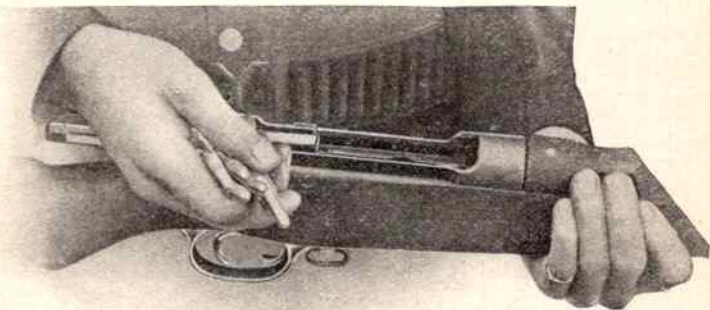
cased. The hollow point was for two reasons, it made a good game killing bullet and it gave a longer bullet for the same weight, with consequent greater steadiness of flight. Later the Eley concern, with which Ross collaborated in producing the .280 cartridge, brought out the match ammunition with pure Spitzer points and still more recently—within the last six months, the collapsible, hollow, copper-capped Spitzer-point bullet that is without an equal in this country.

Our own factories have claimed ever since the production of our Model 1906 cartridge and the coming of the modified model of the New Springfield, that they were unable to make a good game killing bullet of the Spitzer shape and with the high velocity of the service cartridge. We are therefore compelled to take a scrub cartridge with either 190 or 220 grain blunt nosed bullet with an initial velocity of about 2200 foot seconds and with the correspondingly higher trajectory, instead of getting a modern high velocity game cartridge, approaching our service cartridge in velocity and flat trajectory. The English factories have us beaten so far in this respect.

This hollow copper point bullet is not new, as it is used in a slightly modified form by Westley Richard, the well known English gun maker. At the high velocity of the .280 cartridge it is the most terrible game killing missile on the market.

A photograph of a bullet, cut open lengthwise, is included with this article and may give an idea of the construction of this bullet. It looks as though it had been for the regular Ross hollow blunt point bullet and then a hollow copper tube set into the point, projecting about  $\frac{1}{4}$ -inch and running to a point, while the other end runs an equal distance into the bullet. The tube being pointed on its outer end and its sides widening to about  $\frac{1}{4}$ -inch at the inner end where it is set in the lead, gives a wedge effect on striking anything, while in flight it has the advantages of the Spitzer shape. In appearance it looks like the regular sharp pointed New Springfield bullet, point a trifle longer and the last  $\frac{1}{4}$  inch of red copper instead of the white, cupro-nickel jacket of the ordinary bullet.

I have not tried the bullet on meat—outside two stray cats and a few rabbits, but it mushrooms perfectly in wood and tears up worse than the ordinary lead point, metal patched bullet. The animals referred to, of course, looked as though somebody had fed them with nitro-glycerine and then caressed them with a baseball bat, but this effect would be



METHOD OF LOADING THE ROSS



produced by a full metal patched bullet at the velocity of these copper point Ross bullets.

The velocity of the .280 cartridge varies. There is nothing on the market to compare with it, outside a 7 m. cartridge recently brought out by Rigby. The ammunition I am using gives according to Eley's catalogue, 3050 foot seconds initial velocity and a shade under 2900 foot pounds striking energy. The .405 Winchester—for comparison— gives 3050 foot pounds.

The 160 grain bullet at 3100 foot seconds—which velocity was obtained at first—develops 3400 foot pounds energy. Its present velocity is about 3000 with 3200 foot pounds energy. The .30-40 develops 2000 foot pounds with a trajectory three times as high as the Ross.

Shooting at an object 800 yards away, the Ross .280 bullet rises but 4 feet 9 inches above the line of sight. The .30-40 rises 14 feet. In other words, the danger space of the Ross from a military standpoint is 800 yards or more. Shooting at 100 yards the Ross bullet rises but 8 feet 5½ inches. The .30-40 rises 25 feet 1 inch.

The advantage of such a cartridge for game shooting—particularly where long shots had to be taken—is enormous. Another set of figures will illustrate this still more plainly.

Using the 140 grain bullet and shooting a rifle sighted for 200 yards, the bullet will strike 2 inches too high at 100 yards and 8 inches low at 300 yards, in neither case enough to cause a miss of an animal as large as a dog. With the .30-40 sighted the same way the bullet strikes 4½ inches high at 100 yards and 16½ inches low at 300 yards. This is of course a distance equivalent to a miss.

For long shots—hitherto usually considered as impossible to make successfully, this Ross .280 cartridge offers opportunities worth grasping where game is scarce. An animal under 600 yards, would be in danger of being hit, were the shooter equipped with a rifle handling the .280 cartridge and able to judge distance within 50 per cent.

The proper sight equipment would be a telescope or the optical sights mentioned, adjusted to about 250 yards. With this equipment on the .280 Ross a slight change in holding would make the rifle good from close range to 500 yards.

The .280 cartridge is not one that can be obtained in any rifle the prospective purchaser happens to fancy. It is significant that although the .280 cartridge can be used by anyone, there is but one rifle made for it outside the Ross—that being the Lancaster falling block rifle, having an action that is practically the strongest in the world.

A cartridge is of little value regardless of its striking power or flat trajectory if it is not accurate. In spite of this terrific velocity and the present experimental stage of the .280 cartridge it has proven itself in the Ross rifle to be as accurate as any cartridge made and to give better results than any other for target work through its lessened sensitiveness to wind.

At the great matches at Bisley, England, in 1908, the Ross rifle with the .280 cartridge won some of the biggest prizes hung up against fields of the best men in England and the United States.

Some of the records of this rifle follow:—

Halford Memorial Challenge Cup, 15 shots each at 900 and 1000 yards. Possible score at each range 75. Ross won, 75 at 900, 72 at 1000 yards.

Major Martin of the American Olympic rifle

team took fourth in this match, with the New Springfield.

Edge Match Rifle Competition, 15 shots each at 1000 and 1100 yards, possible 75 at each range.

Ross won, 73 and 73. In the Halford the Ross bored out a possible—15 shots in the bull at 900 yards.

Albert Match Rifle Competition, 10 shots each at 800 and 900 yards, 15 shots at 1000 yards. Possible at first two ranges, 50 each, 75 possible at last range.

Ross took third, with 49 *ex* 50; 48 *ex* 50 and 75 *ex* 75, giving Jones, the rifleman making the scores, and the man who designed the .280 cartridge with Ross, the long range championship of England for 1908.

Another Ross user landed second in the Waldegrave at 800 and 900 yards with 49 and 50 and in the "Bass" ten shots at 900 and 1000 yards the two Ross users took fifth and sixth places with 49 and 48 each.

Before the 1909 Bisley matches came around the Eley people began to experiment with the bullet jacket and spoiled the match ammunition for that year, putting the Ross out of the running to some extent. The Canadian militia team, however, were armed with the Ross, .303 in 1909 and cleaned up seven of the great events at Bisley, including the Kolapore, the Mac Kinnen, the Graphic, the Daily Graphic cups and the Jubilee Trophy, with the All Comers' Aggregate.

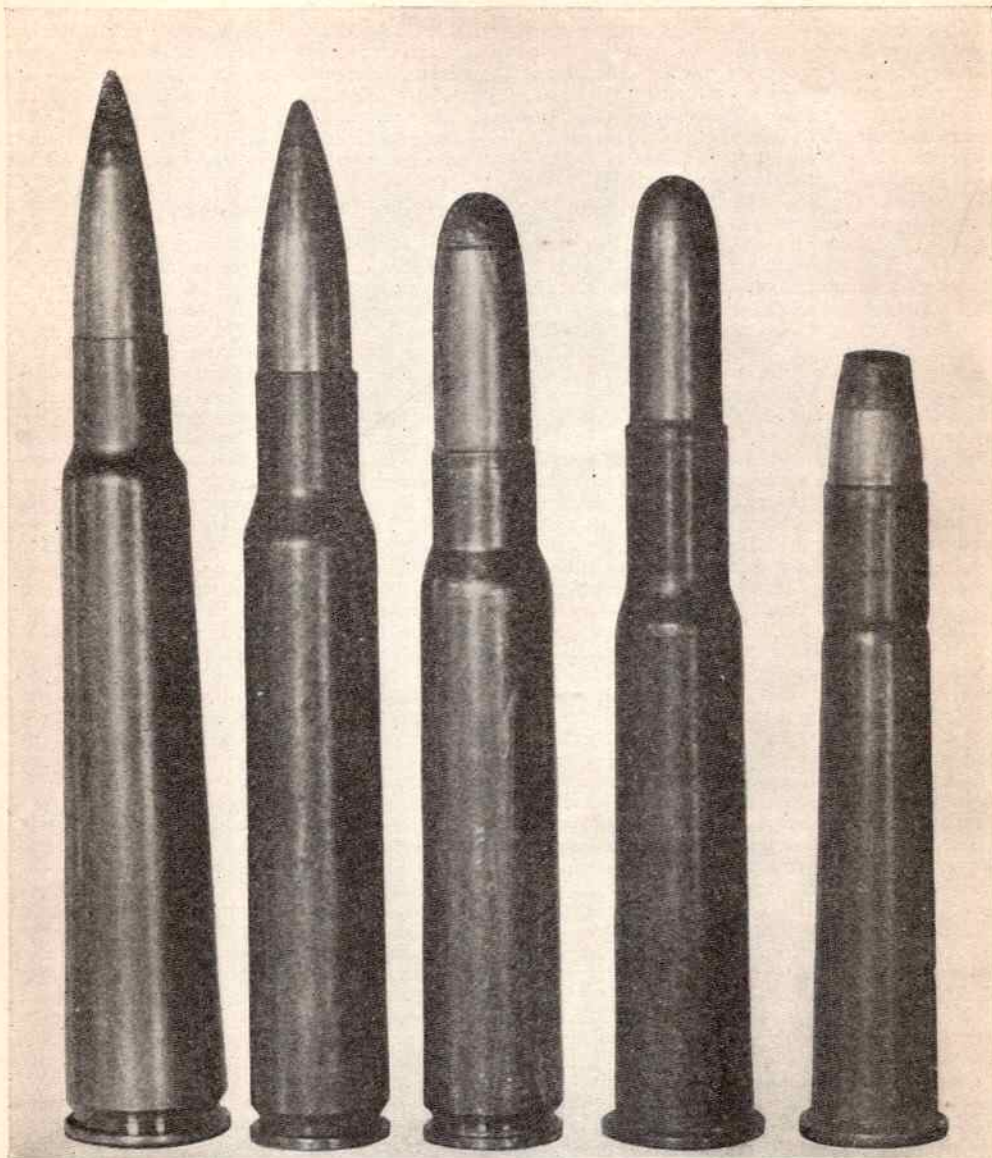
In the Canadian matches for this year, the Ross .303 hopelessly outclassed the Lee-Enfield in practically all the matches. The full list of the Ross scores at Bisley in 1908 is as follows:

Gold Jewel, English VIII; Waldegrave 99 *ex* 100; Bass 97 *ex* 100; Wimbledon Cup, 68 *ex* 75; Albert, 170 *ex* 175; Halford Memorial, 147 *ex* 150; record; Edge, 146 *ex* 150, record; Hopton Match Rifle Aggregate, 726 *ex* 750, record; Eandco, 50 *ex* 50; Freemantle, 50 *ex* 50; Wistow, 50 *ex* 50; Doyle, 35 *ex* 35; Association Cup, 35 *ex* 35; M. R. Tyro, 50 *ex* 50; Kings Norton Aggregate, 270 *ex* 270; Elcho Shield, 220 *ex* 225.

The record shows the Ross .280 cartridge and the Ross rifle to be equally accurate and the two to be a combination hard to beat, having the accuracy of our New Springfield cartridge, with less sensitiveness to wind—an important consideration at long range in spite of the careful doping of conditions by our Caseys.

The copper tube ammunition which I am using gives 51,000 pounds pressure, while the match stuff gives 49,000. In spite of the high velocity, 400 foot seconds greater than our New Springfield, I cannot detect the least sign of metal fouling, although ammonia dope would probably show the discoloration of the copper that must be present. However, in my New Springfield the fouling shows in the form of little flakes at the end of 50 rounds, the deposit being close to the muzzle. At the end of a hundred rounds the zero of the rifle changes unless the fouling is removed. It is hard to believe but it seems to be a fact, from my own experience, that the .280 ammunition in the Ross does not give trouble from metal fouling—which the Ross people have claimed for a year or so. Whether this is due to the Neonite powder with its graphite to the primer, to the shape of the rifling or to the composition of the bullet jacket, I do not know. There is no visible metal fouling in my Ross rifle





The Ross .280 and four other well known cartridges. Right to left: 32-40; 30-40; 8 m.m.; 1906 Government Springfield; Ross Eley, .280 with copper point.

barrel and I have not yet used the ammonia dope, this much I do know.

The recoil of this rifle is not given in any catalogue or report of tests of the rifle and cartridge, but to my somewhat toughened shoulder the recoil is so much like that of the New Springfield that I could not tell them apart were I to fire the two rifles with my eyes shut and with some way to prevent the balance giving the secret away.

It being manifestly impossible to get with the rather crude metallic sights on this rifle, a group at all commensurate with the shooting ability of the arm, I have not attempted to test the rifle out

for accuracy. Nothing short of a machine rest or a muzzle rest and telescopic sights will give a fair idea of the rifle's capabilities. A possible at 500 yards was rather satisfactory to me but ten shots in a 20-inch bull at 500 yards is no proof of the accuracy of a rifle. Chas. Lancaster, known all over the world for the splendid arms he turns out, was so impressed with the excellence of the .280 cartridge that he not only commenced the manufacture of a Ross rifle with his own patent oval bore system of barrel, but also made a special falling block pattern of rifle for this cartridge. No test of mine could either add to, take away from the



long list of records made with this .280 cartridge, and I have not attempted to do more than see if the rifle would shoot as well as I could point it and to try out the action in every way I could think of.

The .280 case is the largest cartridge for small bore rifles, in existence. The photograph of the different cartridges gives an idea of the comparative sizes. The New Springfield cartridge—Model 1906—is  $3\frac{3}{4}$  inches long. The Ross .280 is  $3\frac{1}{4}$  inches. The bullet of the New Springfield cartridge, however, is set but a scant  $\frac{1}{2}$ -inch in the neck of the cartridge, while the Ross bullet is set down the entire length of the neck. The Ross at the rear of the powder chamber measures .532 inch. The New Springfield is .470 inch. The Ross powder chamber is  $2\frac{1}{8}$  inches long. The New Springfield is  $1\frac{1}{2}$  inches long. The 8 m. m. is  $1\frac{1}{4}$  inches. The Ross tapers from .532 inch down to .422 at the shoulder. The New Springfield tapers from .470 inch to .412 inch. The 30.40 cartridge is .457 inch at the rear end of the powder chamber.

The Ross .280 cartridge in other words is a .53 caliber at the back of the rimless shell and a .28 at the front. The great taper has much to do with the easy extraction of the cartridge and its shape precludes all possibility of gas escape. The .280 cartridge has a 26 per cent. taper from back to front of powder chamber, while the New Springfield has a taper of 13 per cent. The Ross .280 cartridge will hold 60 grains of W. A. powder, while the New Springfield will hold 50. The powder in this .280 cartridge is not loose but is packed in, with the bullet resting on it and there is no movement audible when shaking the shell. The New Springfield cartridge will not hold the powder in the Ross, even when filled to the top of the neck. The bullet even in this 140 grain weight is longer than the New Springfield bullet, measuring  $1\frac{1}{4}$  inches while the New Springfield measures  $1\frac{1}{8}$  inches in length.

The target shooting merits of this cartridge are amply proven by the list of the Ross victories. It failed to class in 1909 merely through the pig-headed change of bullet make-up by the Eley people. Inspecting a diagram made the same day and in the same string, half with the 1908 ammunition and half with the 1909, the difference is noticeable. I saw a diagram made at 1040 yards with the Ross under the circumstances mentioned. The score of the 1908 stuff was 107 ex a possible 110, with the personal equation of the shooter to be taken into consideration. With the 1909 stuff five shots resulted in a score of 8 ex a possible 25—a 3, preceded and followed by a miss; a 5 and another miss for the five shots. 15 shots just prior to this, fired with the same rifle and by the same man scored 73 ex 75, while six shots following this 1909 stuff scored five bulls for the six shots, the "four" being called by the shooter as a bad let-off.

The game killing properties of the .280 cartridge are less known, but it is a fact that the cartridge is as fine for game as for target practice. An instance in mind is a shot at a bull moose at 125 yards, made by Mr. E. L. Newcombe. The moose weighed 1,200 pounds, but was knocked completely off his feet by the first shot, the bullet passing quateringly through the lungs and raking backward. The same writer states that caribou go out of business immediately with a shot anywhere in the vicinity of the foreshoulder. The cartridge has been tried thoroughly by hunters in India and

Scotland, as well as in Canada and has proven itself to be a killer. This is all we want to know. The great advantage of the flat trajectory is too well known to allow any other cartridge to class providing this .280 kills what it hits—and the evidence proves that it does.

There be those who believe that a heavy bullet, traveling at a comparatively slow velocity, will kill where a light bullet traveling at high velocity will fail, but the numbers of this class of crank decrease year by year. As proof take the steady trend of English sportsmen away from the terrific 4 and 8-bore elephant guns to the modern high velocity cartridges, the largest of which is the .600 bore and the average of which for the largest game is the .400 bore. The writer wishes to place himself on record as stating that three years will see 3,000 foot seconds the standard velocity for our military rifle and for most of our big game cartridges—slow as our manufacturers are to adopt modern cartridges.

We are at present behind the times in our game cartridges as we have been in our military arms. The Germans had the Spitzer bullet and the high velocity four years before our government. Likewise the English are forging ahead, with game cartridges developing from 2,500 foot seconds to 3,100 and using Spitzer point bullets, while we trot along in the rear with our make-shift game cartridges as represented by the latest loads for the 1906 Model rifle—the old Krag bullet and 2,200 foot seconds velocity as compared with 3,100.

In the Ross .280 rifle we have the fastest bolt action made, and an action as strong as any with a cartridge that is both a target cartridge of the highest accuracy and the least sensitiveness to wind and also a game killing cartridge without an equal for its effectiveness in every way.

The Ross rifle is without question the most desirable bolt action arm made for game shooting and for the man who can afford the expensive weapon there is nothing finer on earth. Our own New Springfield, however, is equally strong and would handle the .280 cartridge to perfection.

It is the earnest hope of the writer that our cartridge and our rifle factories will get together in the near future and turn out a rifle with the New Springfield action, to take this .280 cartridge or that the Ross people will see their way clear to make up rifles with the Ross bolt that can be successfully sold in this country as made for the .280 cartridge.

Both cartridge and rifle are far too good to be monopolized by Johnny Bull. Yet the gentleman has his choice of this and half a dozen other cartridges without an equal in this country, while our own private rifle and ammunition makers sleep sweetly in their tariff-protected security.

I have an intimation that a new Ross self-loading rifle is being perfected and that it is to be an arm that outclasses anything yet produced in the automatic line. I also have the promise of Sir Charles Ross that the privilege of examining the first one turned out, shall be mine.

And this promise kept, I in turn promise that the readers of the Outer's Book shall be the first ones to learn of the new rifle in detail. An automatic rifle taking the wonderful .280 cartridge and shorter over all than our New Springfield, barrel-lengths the same, will be an arm without an equal.

The world moves.



# THE BEST SIX-GUN IN THE SOUTHWEST

By MAURICE H. DECKER

I RECENTLY had the pleasure of examining and testing what its owner termed as the best shooting revolver of its type and age, that was ever known upon the South-western frontier. This seemed a pretty broad statement but he assured me every gun man who had ever handled and tried the weapon had unanimously agreed upon its general merits and excellence of accuracy. The gun itself was one of the earlier models made by Colt, of the powder and ball, percussion cap type with heavy eight-inch barrel and the finest proportioned stock that I have ever had the pleasure of grasping. It was of walnut and, while shaped after the general style of the one on the present single action army model, was much longer and broader at the butt. It was so long that even when grasped by a large handed man, a portion of the handle extended below his grip. The stock of the S. A. army gun is too short to afford a firm, easy grasp, and I would give almost anything if my .45 possessed the handle of this old veteran. For all of its fifty years of intermittent service,—for the owner until just recently occasionally unlimbered it and punctured a tin can twice in the air, the action was as smooth and the main spring as strong as ever. This model possessed a brass trigger-guard and plate, and apropos to this, I have never encountered a plausible reason why so many of the early manufacturers built portions of the actions of their various productions of this metal. This arm was made before the organization of the Colts Patent Fire Arms Company, for along the barrel, stamped in the steel, ran the legend, "Address Col. Sam. Colt, New York, N. Y., U. S. A." A wise and paying advertisement for many a ranger and cow puncher had read the inscription and had sent in his month's wages for a brace of these guns.

In those early days the excellence of each gun put out depended a great deal upon the skill and care of the gunsmith who fashioned it, largely by hand. Each weapon possessed its separate individuality and shot good, bad or indifferently, just as it happened to be constructed. The buying of a six-shooter was somewhat of a gamble as is the selection of a razor at the present day. In the latter, several of the same make and quality will, when tested and compared, show marvellous differences in temper and edge. So it was with the revolver. Although all were good, accurate, reliable weapons in an ordinary sense, once in a great while, one in ten thousand, a perfect masterpiece of wonderful hair-splitting accuracy emerged from the hands of some master workman which was a perfect revelation in performance to the experienced handler of the six-shooter. Just such a prodigy

was this old veteran. Its companion purchased the same day at the Colt Armory, although of sufficient accuracy to satisfy the average marksman, could in no way compare to this one.

In general hang, balance and the ease with which the barrel can be instinctively aimed at any object, this old gun excels any other I have ever handled. The front sight was small and thin and the rear notch was filed in the lip of the hammer, being in correct position for aiming when cocked. A lot has been said and more has been written about the snap shooting performed by the older plainsmen who seldom if ever raised their weapon on a level with the eye. After handling this model I am no longer surprised or marvel at any of the feats in quick, accurate shooting credited to those paragons of the six-shooter. The cap and ball models were usually loaded with a comparatively light charge of powder and the muzzle weight gave them the maximum steadiness when aiming. As before stated, the whole secret in the excellence of this arm lay in its handle. I believe if the grip was placed on a crow bar or a pig of lead, the latter, by virtue of this addition, would assume the graceful poise of the six-shooter.

The gun men who used this cap and ball type of pistol practiced a method of discharging their guns which I have never run across or heard of as being employed by the later artists of the fixed ammunition type of small arm. The true creed of the six-shooter in firing, you know, is to throw down your gun upon the target and pull, without sighting along the barrel. The S. A. Army lays claim to some of these instructive pointing and aiming qualities, but this old model had every one I have ever used beaten in every particular. The finger can be pointed or aimed accurately at any object desired without sighting along it. This fact or principle, was realized and used to advantage by these original users of the six-shooter especially those just mastering its art. They extended the forefinger along the side of the gun parallel to the barrel and pressed the trigger with the second or middle digit. In this manner the barrel could be directed in any direction as easily as the finger is pointed.

These guns, heavy at the muzzle by reason of the ram rod attachment, made excellent clubs when the contents of the cylinder were exhausted and in the hands of an active plainsman were used with telling effect. Contrary to tradition and yellow backed literature. The muzzle end of the barrel was not grasped in the hand and the enemy dropped by a blow over the head with the butt. The grip on the stock was retained the same as when firing and the blow delivered with the heavy



barrel with a side sweep of the arm. The word holster was unknown in the vocabulary of the frontiersman, all gun cases being called scabbards.

The Colts percussion cap models were rather expensive when compared to the modern productions, a pair costing the substantial sum of \$55.00, a good month's wages. The first ones contracted for by the government were even more costly, for in the year of 1847, the ordnance department ordered 1,000 revolvers of Col. Colt to arm our troop at the beginning of the Mexican War and paid the neat sum of \$28,000 for them.

The importance of the six-shooter and its value, both sentimental and intrinsic, to the plainsman whose most trusted companion it was, can never be overestimated. Its performance can and has been exaggerated and garnished by the tales of modern writers of western fiction, but the warm spot it occupied in the hearts of its advocates can never be fully understood or appreciated by the layman. I have never yet come across a true Westerner, who for any sum would part with, or who did not regard as his most priceless possession—his worn out six-shooter.

## THE ACTION OF AMBER GLASSES

By E. C. CROSSMAN

MR. NEWTON'S interesting article on the subject of why amber colored shooting glasses improve the definition of the front sight and bull, which appeared in the January number of the *Outer's*, contains so much that is true and is so skillfully written that the conclusion he draws as to why amber colored glasses are soothing to the eye and help in definition, will probably pass as the true explanation—much as a dose of quinine or some other substance that we ordinarily cannot swallow is easily taken into the system in the middle of a choco'ate drop. Having made some little study of the effects of light and being a photographer of some months' standing, to put the case mildly, I am tempted to examine into this explanation of the good effects of the light yellow glasses that we know help us in our shooting.

Mr. Newton explains that most authorities on shooting ignore the real reason for this helpfulness on the part of the glasses and having demonstrated this negligence by a quotation from the book of a doctor of medicine who should know of the true reason but who does not explain it in his book, Mr. Newton goes on to give his version of the action of these glasses. The first part of his article is given up to the review of the way a ray of white light is broken up by a prism into the seven primary colors and points out the difference between the action of the yellow rays at one end of the spectrum and the ultra violet at the other. He did not explain that the violet end of the spectrum is not all of light but that beyond this come the ultra-violet rays which he mentions, then what is known as the Finsen ray, invisible and much like the "X" ray and after this the "X" or Roentgen ray itself. Whether these latter two forms of light form part of solar light or not we do not know but it is probable that they do. Mr. Newton points out that the violet end of the spectrum are the actinic rays and are the part of solar light affecting the chemicals in the photographer's plate—in other words cause a loosening of the affinity of the bromine for the

silver in the dry plate and have the same effect when a chloride of silver coating is used—as in the case of printing out papers. So far his reasoning is sound, being based on well known facts in regard to the chemical action of light. He then compares the eye to a camera, with the lens and shutter and diaphragm and sensitive plate all having their duplicates in the eye.

The weakness of his argument comes when he attempts to demonstrate that the irritating effect of solar light comes from the actinic end of the spectrum, acting on the sensitive retina, as the same rays act on a photographic plate coated with silver. This is the one point in which his conclusions do not harmonize with other well known facts and which point not having been proven, overturns his entire theory as to the reason for the greater definition obtained by amber glasses. He demonstrates clearly that the yellow rays are the ones to which the retina is sensitive and which form the image which the eye "sees." In other words the yellow rays is to the eye what the violet rays are to the bromide of silver on a dry plate. The properties of the two ends of the spectrum being entirely different, the yellow rays have little or no effect on a bromide of silver mixture, while the violet rays have an intense loosening effect which the photographer's developing solution completes by reducing the light-struck portions to metallic silver by taking away the bromine side of the combination. Yet we find the statement that the eye is sensitive to opposite ends of the spectrum—that it is not only sensitive to the yellow or image forming rays but that it is also sensitive to the violet or chemical rays which Mr. Newton proves are stronger in form absolutely invisible to the eye.

This conclusion is hardly in harmony with the facts in the case and if it is admitted as the correct one, then we have in the retina a very peculiar surface that forms an image out of the rays on one end of the spectrum—is sensitive to them in other words—and yet is sensitive to the rays at the other end, rays which have not the same character-



istics in any way and which are strongest chemically when not even visible, as Mr. Newton states—page 63, paragraph 2. Mr. Newton states that “luminosity is but one of the elements of light” and that this element of light is found most largely in the yellow rays. This expression is hardly convincing, being equivalent to saying that moisture is one of the elements of water, luminosity being merely the quality of being bright, a rather strange statement to make about light itself. The yellow rays, as pointed out, form the image on the retina and the only rays used by the eye and to which the eye is sensitive. It is hardly conceivable that the retina is sensitive to the yellow rays to the extent of forming the image from them and yet sensitive to the point of irritation to the rays at the other end of the spectrum which Mr. Newton demonstrates are entirely different in quality. We know nothing of the retina or to what the retina is sensitive. If we did we would know how we see—how the image is transmitted to the brain by the optic nerves and then how the convoluted mass of grey stuff in our heads produces thoughts—translates the impressions received from the eye camera into intelligent reports to the commander-in-chief—wherever he may be located in that queer mass of stuff in our skulls. If Mr. Newton is able to explain the principle of how thought comes about, how the brain works, then he can work backward and tell us definitely about the sensitiveness of the retina. If he cannot do this, then he would better confine himself to the process of the eye camera in passing light—and drop the light when it passes the iris. Beyond this we know nothing of how it is taken care of, although we have speculated much.

It may be well to remark before closing that there is a well-known curative process—part of the outfit of so-called “naturopathic” doctors in which blue and violet light is used on account of its soothing influence on the body. Not having passed through a course of sprouts of this description I cannot say whether the eyes are also rested by these blue or violet rays, but the evidence is that the body is soothed and the jangled nerves relaxed by the rays of this color. This being true,

it is hard to see how the end of the spectrum of this color has an irritating effect on the retina and yet a soothing effect on the nerves. Blue glasses have been used for years by those with weak eyes and yet glasses of this color admit the very rays that Mr. Newton says are irritating to the eye. It would seem in view of past experience that perhaps we must look further for the proper explanation of why amber colored glasses aid in our vision.

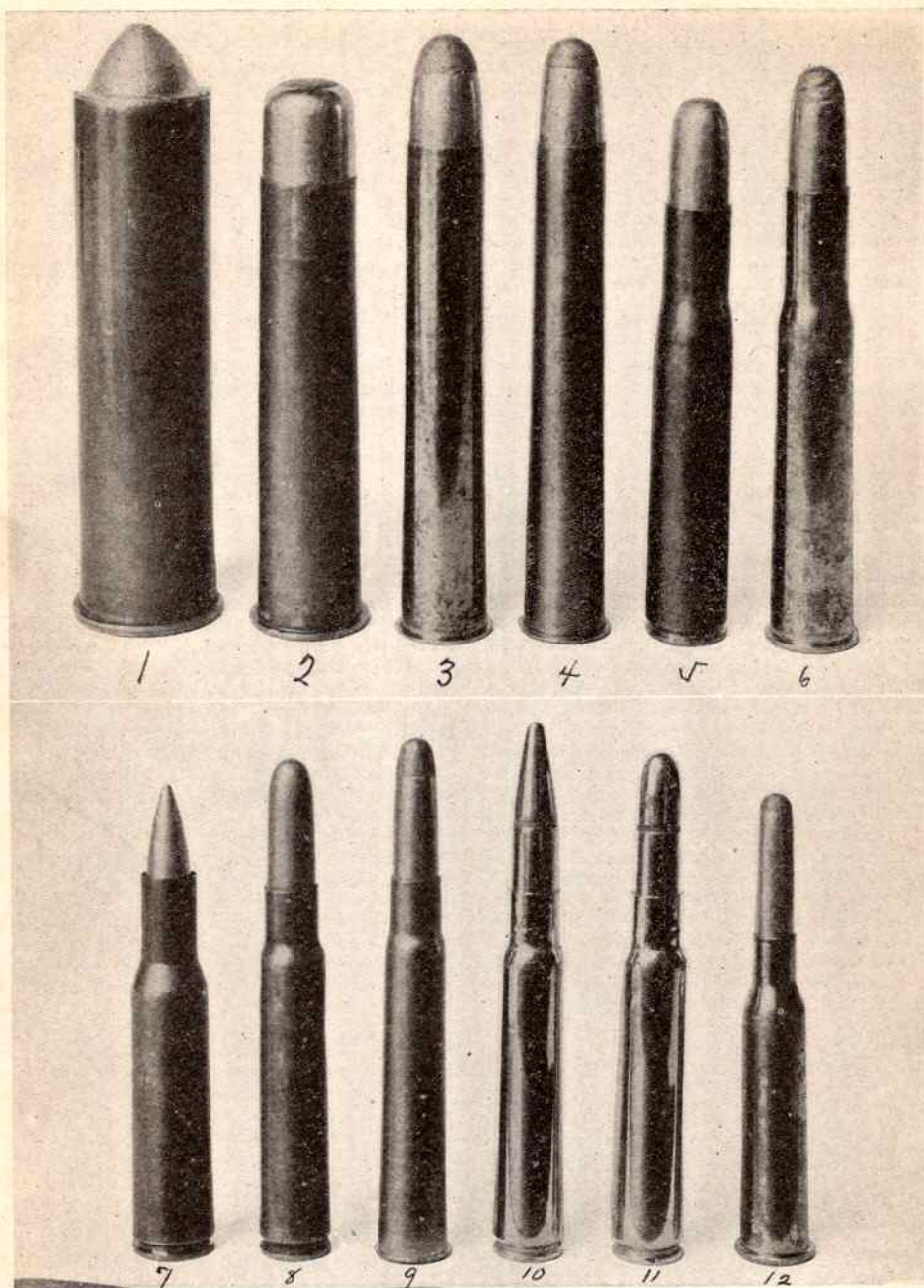
However, I wish to endorse what Mr. Newton has written on the desirability of using the amber glass in all sorts of light for shooting and find them besides quite restful in strong light at any time. Like him, I have not found that glasses of this color are useful only in strong light, but at any time except very dark weather, when it is possible that the image-forming element is not present in large enough quantity to justify us in losing any through somewhat opaque glasses. In purchasing such glasses it is well to fight shy of the cheap sort sold on the street, consisting of cast lenses of glass used ordinarily for windows, the surfaces not plane and the glass refracting light everywhere except in the right direction. The lenses must be ground perfectly plane unless made after a prescription for the individual eyes. This is impossible with cast lenses and glasses made right cannot be purchased under \$1.00 for the plane sort, up to \$12.00 for those corrected for the defects in the individual eyes. Mr. Newton's theory is very plausible and well worked out. It seems to be a trifle contradictory, however, from what we know of light and particularly in view of the proven soothing effect of the blue rays which he accuses as being at the bottom of the trouble in obtaining perfect definition in ordinary lights. Unless Mr. Newton can explain how it is possible for the rays at opposite ends of the spectrum to both affect the retina when the most effective rays at one end are the invisible ones, and can also explain how the blue rays can soothe when used on the body and yet prove irritating to the eye, then the writer will have to believe that the true solution has not been found for the light problem.

## ENGLISH SPORTING CARTRIDGES

THROUGH the courtesy of Mr. E. C. Crossman of Los Angeles, California, who has contributed so liberally to our too limited knowledge of modern high power rifles and their loads, we are able to give our readers a fair idea of some of the most popular cartridges used by English sportsmen. The cartridges and bullets here shown represent a line of ammunition designed for use on game of every description and found in every corner of the world. When it is remembered that the English have long been noted for their skill in gun making, and the diversity of their game list, this little exhibit should prove interesting. At this time when so many of our country-

men are hunting in English territory the subject of caliber, energy, accuracy, and shocking power are topics of more than mere passing interest. It was maintained for many years that enormous weight of lead, and cannon like calibers were indispensable to success when in pursuit of the ponderous pachydermata or the smaller but more vicious carnivora, possessing great vitality and tenacity of life. This theory, once so popular, seems destined to receive some rude bumps. Authentic descriptions of the armaments carried by African big game hunters would indicate that the high power small bore is in the ascendency. Most of the hunters are carrying sporting rifles taking

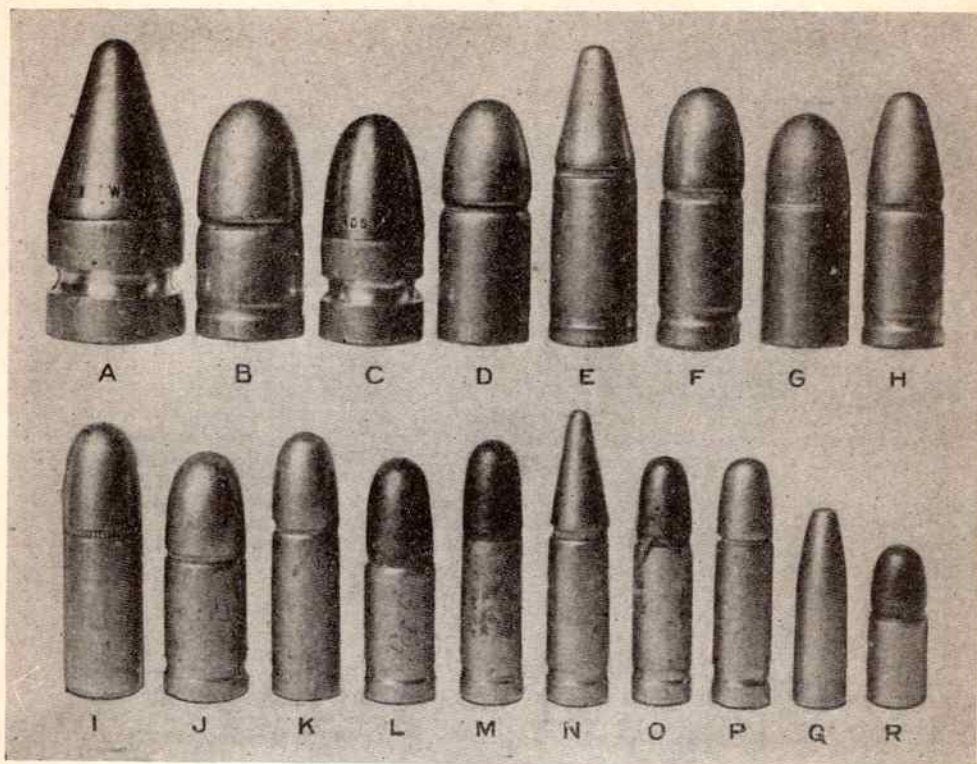




| No.                                                  | Name                              | Weight<br>Bullet | Grains<br>Powder | Velocity | Energy,<br>Pounds |
|------------------------------------------------------|-----------------------------------|------------------|------------------|----------|-------------------|
| No. 1                                                | 8-bore paradox.....               | 24-ounce         | 233 grain        | 1500     | 6273              |
| No. 2                                                | 600 Cordite.....                  | 900 grain        | 110 Cord.        | 1950     | 7592              |
| No. 3                                                | 500 Cordite.....                  | 570 grain        | 80 Cord.         | 2150     | 5844              |
| No. 4                                                | 450 Cordite.....                  | 480 grain        | 70 Cord.         | 2150     | 4909              |
| (This is Roosevelt's favorite, used in his Holland). |                                   |                  |                  |          |                   |
| No. 5                                                | 450-400.....                      | 400 grain        | 60               | 2150     | 4100              |
| No. 6                                                | 404 Jeffrey.....                  | 400 grain        | 60               | 2125     | 4005              |
| No. 7                                                | 333 Jeffrey.....                  | 250 grain        | .....            | 2600     | 4200              |
| No. 8                                                | 318 Westley-Richards & Bland..... | 250 grain        | .....            | 2500     | 3600              |
| No. 9                                                | 375-303.....                      | 215 grain        | .....            | 2500     | 2980              |
| No. 12                                               | 256 Mannlicher.....               | 156 grain        | .....            | 2460     | 1993              |

Rigby Mauser, 7 mm. bullet, cartridge is the standard 7 mm., but develops 3000 foot-seconds with this bullet and Axite powder.





A—12-gauge, brass, Westley-Richards.  
 B—Nickel, full-mantle, 585 caliber.  
 C—28-gauge, brass, Westley-Richards.  
 D—Nickel, full-mantle, 410 caliber.  
 E—Nickel, hollow cap.  
 F—Nickel, hollow cap, .462 caliber.  
 G—Nickel, half-mantle, lead point, .475 cal.  
 H—Nickel, hollow cap, .425 caliber.  
 I—Nickel, full mantle, .410 caliber.

J—Nickel, full-mantle, .423 caliber.  
 K—Nickel, full-mantle, .360 caliber.  
 L—Nickel base, copper point, .375 caliber.  
 M—Nickel base, copper point, .33 caliber.  
 N—Nickel, hollow point.  
 O—Nickel base, copper point, .310 caliber.  
 P—Nickel, full mantle.  
 Q—Nickel, full-mantle, .256 caliber.  
 R—Nickel base, copper point, 7 mm.

cartridges of small caliber, but possessing great speed, range and penetration. The Mauser and Mannlicher rifles in 8 and 9 mm. seem to be preferred, but calibers as small as .256 are being used on lions and other large and dangerous game. Our own Roosevelt gives valuable data on the performance of our New Springfield with its tiny 150-grain, pointed bullet. Following this line of reasoning it is logical to ask why many of our excellent American cartridges should not be made to cover a much wider field of usefulness by equipping them with bullets of different weights and designs. For instance, our .32-40-160, one of the very best target loads that has yet been designed, could be greatly improved by increasing its velocity. I believe this cartridge could be improved in the same ratio as the .30 government, which would mean nearly one-third in velocity, energy, range and a vastly improved trajectory. There are many others in our list of lately developed American

cartridges which might be improved in like manner. Why not make the .25-35, the .30-30, .32 Special, the .35 W. C. F., the .405 W. C. F. and the whole line of high power cartridges as effective in proportion to the material used in their make-up as the 1906 Springfield, the .280 Ross, the .333 Jeffrey or the .256 Mannlicher. We are constantly in receipt of queries as to which is the stronger arm, which has the lowest trajectory, which the greater range and penetration. Not once have we been asked for information in regard to an arm with a limited range. Since it is possible to improve the ballistic performance of so many of our arms by merely modifying the weight and shape of the bullet it would seem that it would be worth while to give this end of the game some attention. If it can be shown that the light pointed bullet can be depended on to do the work at the end of its flight, we may soon expect a complete recompilation of our ballistic tables.



## THE NEW STANDARD RIFLE

WE are in receipt of a letter from a discriminating gentleman who feels that there is too much sameness about the discussions carried on in this department and begs us to give our readers something new. That in the face of Mr. Crossman's exhaustive analysis of the Ross rifle, the newest of new guns, and various other up-to-date things, jars us a bit, but we want to give our readers the things they desire and we are striving all the time for something new. By way of suggestion our correspondent says, "We want to hear something about the new guns from someone who knows. How about the Standard? Is it what it is intended to be? We want to know what this gun will do, or would do if used on deer and black bear. What is the velocity, energy and trajectory?"

Answering his suggestion, we want to say that it is rather early to speak authoritatively on the Standard rifle as it is a newcomer in the field and has yet to be judged by the test of actual service which is the final test and the one by which all sportsman's arms must stand or fall.

The Standard rifle comes to us well recommended. The best of material is employed in its construction and experts who have examined it pronounce it correct in mechanical principle, symmetrical in outline, attractive in appearance, and of first class workmanship. The barrel is made of ordnance steel and the action is sufficiently powerful to permit the use of high power cartridges. The speed of fire is limited only by the ability of the operator to manipulate the trigger. The capacity of the magazine is five shots which with one in the chamber gives the sportsman six shots which may be fired in one second. Both the hand and gas operated models are made in two piece take down style and can readily be assembled and taken apart without the use of tools. After the rifle is taken apart for packing or cleaning all working parts remain firmly fixed to the frame or in the receiver. No screws are used in assembling the mechanism. A safety lock renders a premature discharge impossible and the action is so positive and so nearly instantaneous that it is impossible to press the trigger a second time before the reloading is complete and the breech bolt is securely locked. All Standard rifles are fitted with Lyman ivory tip front

and sporting rear sights and holes are provided in the tang for attaching Peep sights. The cartridges used in the Standard rifles are made by all the leading ammunition companies and the arms are chambered for the regular factory loads. The rifles as at present made are chambered for the Remington .25-35, .30-30, .32 and .35 high power cartridges. The average ballistics are as follows:

For a .25-35 Remington with 117 grain bullet, the velocity is 2127 foot seconds; energy, 1175 foot pounds; trajectory, 4.95 inches for 200 yards, 13.77 inches for 300 yards; 28.12 inches for 400 yards and 54.51 inches for 500 yards. A soft nosed bullet will penetrate eleven  $\frac{7}{8}$ -inch pine boards and a full mantle, forty-four boards.

For a .30-30 Remington, with 170 grain bullet, the velocity is 2020 foot seconds; energy, 1540 foot pounds; trajectory, 5.74 inches for 200 yards, 15.21 inches for 300 yards, 31.56 inches for 400 yards, and 57.12 for 500 yards; a soft nosed bullet will penetrate eleven and a full mantle 42 boards.

For a .32 Remington, with 165 grain bullet, the velocity is 2057 foot seconds; the energy, 1550 foot pounds; the trajectory, 5.79 inches for 200 yards, 15.76 inches for 300 yards, 33.44 inches for 400 yards, and 62.68 inches for 500 yards; a soft nosed bullet will penetrate twelve and a full mantle 41 boards.

For a .35 Remington, with 200 grain bullet, the velocity is 2000 foot seconds; energy, 1776 foot pounds; trajectory, 5.40 inches for 200 yards, 16.60 for 300 yards, 36.40 for 400 yards and 65.58 for 500 yards; a soft nosed bullet will penetrate thirteen and a full mantle thirty-two boards.

The range for accuracy for all of the above cartridges is from 500 to 700 yards.

Perhaps some of the questions in our correspondent's mind will be answered by the following letter from a gentleman who appears to have given the new rifle a thorough test:

"The discussions and criticisms of the various types of sporting and military rifles manufactured in this country and abroad today disclose the fact that there is a great chance for improvement in construction to keep abreast with the demand for speed, simplicity, strength and beauty in everything mechanical.

"All sportsmen are familiar with the bolt-action military rifle and the lever action sporting rifle. Each has advantages over the other according to how and where it is to be used. The strength, durability and ease of repair of the military bolt type appeals to the sportsman going out for big game in the wilderness, away from civilization and a repair shop; while the man who is going to hunt near home for his game, is often attracted by the appearance, weight, balance and speed of fire of the lever action rifle.

"Yet neither of these actions is a simple, natural or rapid action. They require the operator to make too many movements with his hands in re-



THE "STANDARD"  
EASY TAKE-DOWN

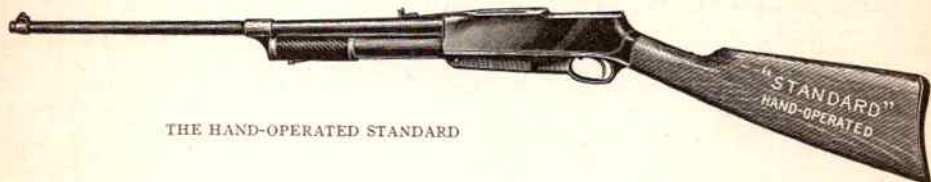
THE STANDARD TAKE DOWN



loading. Further, a sportsman, unless he is very expert, cannot reload with his lever action for a second quick shot, without losing his sight, and with the military bolt action, even the expert would have to sight again.

"The writer is interested in watching the success of a new high-power rifle, made by the Standard Arms Company, of Wilmington, Delaware. The old, but natural, trombone or slide action is used for reloading this rifle. The advantage of this

"Another satisfactory point about the new Standard is the position of the safety. It is inside the trigger-guard, just forward of the trigger, where it can be pushed off 'safe' with the trigger finger, just before firing. This avoids the aggravation that so often happens in moments of excitement when taking a quick aim and finding the rifle on safe, and then having to feel around for the safety. In this rifle the safety is arranged to lock the sear and the trigger, so that there is no danger



THE HAND-OPERATED STANDARD

lies in the fact that the operator is not obliged to remove his rifle from his shoulder nor his eye from the game in order to reload for a second shot. He performs the reloading with his left hand, which is on or near the action slide when he fires the first shot. His right hand still holds the rifle in position against his shoulder. The sportsman is thus able to fire two or more shots more rapidly than with a lever or bolt action rifle.

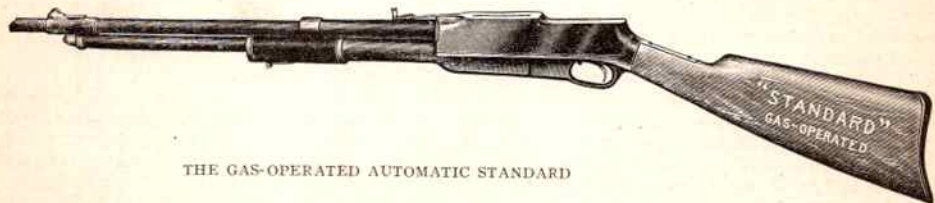
"The magazine of the modern rifle also offers an opportunity for improvement. For high power cartridges the tubular magazine is never considered, as it is dangerous to feed the cartridges with the nose of one against the primer of the next, and also because the balance of the rifle is changed as the magazine becomes empty. The revolving magazine is also unsatisfactory, as it is hard to load and equally hard to unload, and without an indicator it is impossible to know how many it contains at any time. The box magazine is the best of the three types, but the general criticism has been that it gives a clumsy appearance to the rifle. It either projects too far from the bottom if the cartridges are piled one above the other, or it is too broad when the cartridges are staggered, as in a military arm.

of an accidental shot from jarring or dropping the rifle when cocked.

"There is no danger of a premature explosion. The cocking pin, which controls the locking and cocking of the rifle, holds the firing pin away from the primer, and there can be no explosion until the rifle is fully locked.

"The clever 'take-down' device is also a feature of the Standard. The two main parts of the rifle are simply and securely locked together by a plug at one end of the frame or stock section, and a spring lock at the other. It is only necessary—to press on this spring lock through a hole in the frame, back of the guard, and the two parts of the rifle may be instantly separated, leaving the entire mechanism exposed, yet safely housed and firmly fixed in both sections.

"The above improvements and advantages, as they seem to the writer, do not apply alone to the Standard hand-operated rifle. The gas-operated automatic rifle manufactured by the same company is essentially the same as the hand-operated with the addition of a most efficient automatic action.



THE GAS-OPERATED AUTOMATIC STANDARD

"Again, the Standard rifle seems to have overcome the difficulties of the box magazine. There is no protruding magazine. It is part of the frame and offers no obstructions or projections to spoil the smooth appearance of the rifle or strike the hand of the operator. To load the magazine, it is only necessary to press on the spring catch on the bottom, and the cover will fly open. Five cartridges may be dropped in, which will fall into a staggered position. The cover may then be closed with a spring lock. To remove the cartridges, it is only necessary to open the cover and they will drop out into the hand. No clip is required for loading, and no pumping for unloading this magazine.

"This action is entirely different from that used in any other shoulder arm. The power used to eject the empty shell and feed the next cartridge into the barrel chamber, is taken from behind the moving bullet, just before it leaves the muzzle. This pressure is transmitted through an adjustable valve at the end of the barrel, drives back a piston in a small cylinder under the barrel, and compresses the action spring. This rear-ward motion unlocks and withdraws the breech-block, and ejects the empty shell back and over the head of the operator. The backward pressure is instantly relieved when the bullet leaves the barrel, and the action spring carries the breech block forward



again, feeding the next cartridge into the barrel chamber and locking and cocking the rifle.

"The advantages of this system of automatic action are many, viz:

It is simple, safe and sure.

The breech block is rigidly locked.

The full energy of the powder charge is expended on driving the bullet. The automatic action does not begin until the bullet has reached its maximum or muzzle velocity.

The power of ejection of the empty shell is adjustable.

The recoil of the rifle is diminished to a minimum, and spread over a longer period of time, thus elim-

inating the disturbing kick of the high power rifle. The strength, accuracy, balance and beauty of the rifle are not spoiled by the addition of the automatic mechanism.

"The prices of these Standard rifles, both the gas and hand-operated, are a little higher than the prevailing prices of American rifles, but a little lower than the better grade of European arms. However, a sportsman is not often governed by the price when selecting a rifle which best suits his needs and fancy.

"In conclusion, the writer thinks that the Standard will prove itself to be a great and satisfactory improvement in American rifle construction."

## THE LOADING OF 20-BORE GUNS

IT is correct ballistically to load gun barrels of different caliber with charges of powder and shot, or projectiles of equal length, on condition of using the same description of powder in all the loads. Equal rates of pressure will then be set up in all the barrels, so that with equal lengths of barrel all the charges of shot or projectiles will have the same muzzle velocity.

It is on this principle that a .450 express rifle of the old type is loaded with 4 drams of No. 6 black powder and a bullet of 270 grains weight, while the .500 gauge is loaded with 5 drams of the same powder and a bullet weighing 340 grains, the two loads being proportionate to the cross sections of the respective barrels, and therefore of equal length in cartridge cases of corresponding type. The result, as we know, is that with equal lengths of barrel both bullets will have substantially the same velocity.

In a similar way, as the cross sections of the barrels of a 20 and a 12 bore gun are in the ratio of 5 to 7, it is correct to load a 20 bore gun with any length of barrel with a load of powder and shot which is five-sevenths of the amount which would be employed in a 12 bore with a corresponding length of barrel, the same description of powder being employed in both. The articles which have appeared in the Field on the loading of small bore shotguns require to be studied by the light of this criterion of loading. Practically the only load worth using in a small bore shotgun is the full or service load, from which its proof charge is calculated, and these service loads are based on the principle just described—that is to say, they are in proportion to the cubic capacity of a barrel of ordinary length in the different calibers, as shown in the following table, the charges of shot in all cases being made equal to 1 ounce for every 10 cubic inches of barrel capacity, and therefore in

proportion to an estimated mean pressure in the barrel of about 2000 pounds to the square inch for the ordinary rate of muzzle velocity, assuming it to be something like 1200 feet per second. On this the pressure of the proof charge represents an advance of about 50 per cent. in all cases, so that it is just as safe and proper to use  $\frac{1}{2}$  ounce of shot in a 20 bore as  $1\frac{1}{4}$  ounces in a 12 bore. One does not find this point brought out with anything like distinctness in the ordinary works on shooting, though the professed artillerist will find it familiar.

| Barrel | Cubic capacity | r <sup>2</sup> | Service load                |
|--------|----------------|----------------|-----------------------------|
| 20x30  | 9.0 cu. in.    | .096 sq. in.   | 2½ drs. x $\frac{1}{4}$ oz. |
| 16x30  | 10.5 cu. in.   | .112 sq. in.   | 2½ drs. x 1 oz.             |
| 12x30  | 12.6 sq. in.   | .134 sq. in.   | 3½ drs. x 1½ oz.            |

A 20 bore gun of the useful type, or, for the matter of that, a 16, is consequently always a little pigeon gun in weight and solidity, and should be loaded proportionately with five-sevenths of the recognized load for a full weight pigeon gun, using the same description of powder. Whether the cartridge case should be 2½ inches or 2¾ inches long will depend on whether the powder is a condensed or a bulk nitro, and whether it is found, as a matter of fact, that the thickness of wadding found desirable for a 12 bore is also equally necessary for a 20. Strict ballistic propriety also requires that the turnover of the cartridge case should be such as to furnish a resistance in proportion to the smaller cross section of the barrel, which is rather an important point, as there seems to be no material difference in the thickness of the paper used in making the cases in all calibers below 8 bore. Under these circumstances, equal amounts of turnover are likely to lead to a disproportionate amount of resistance, as the gauges get smaller, which is the opposite of what is wanted.—J. B. Nias in *Field* (London).



# WHAT AMERICAN GUN MANUFACTURERS OMIT

By R. L. GLASGOW

IN making up their catalogues American manufacturers of guns and ammunition fail to include information that is of universal interest to American sportsmen. That statement is made advisedly, for it must be acknowledged that there are thousands of people who purchase and use small arms for sport that perhaps do not have the interest in them that would cause them to study them very closely. But it must also be recognized that if the catalogues in question contained more complete information it would arouse an interest in many of those who are at present indifferent as to the mechanical construction, system of operation and adaptation of the arm they are using. In addition to that, the increasing thousands who are taking up target shooting, hunting and other pastimes which make some form of fire-arm necessary or a convenience, are hungering for every bit of information they can get hold of along these lines. It is only necessary to compare the catalogues of English and German manufacturers with those of American manufacturers to see what is meant here. The foreign manufacturer is careful to tell you to the minutest detail how each rifle or gun is built, of what material throughout, how operated, finish, weight, length of stock, drop of stock, length of barrel and other information which leaves little to be guessed at or to require a lot of correspondence. He also takes up the cartridges for which it is designed, gives you the kind of powder it is loaded with and the weight of the charge, weight of bullet of many different forms, velocity, trajectory, penetration and accuracy of the different bullets with different charges, and the pressures developed with each. In most cases these facts are demonstrated by examples shown and attested by "Field," or some other accepted and disinterested authority. On the side of the American manufacturer, there is a small amount of instruction as to how to manipulate the arm for service or dismounting, but not a word as to the pressures which it will withstand, what pressures are generated in the arm, nothing as to the brand of powder used or the weight of the charge. They even fail in many instances to give weight of arm, or weight of bullets. A man wanting to know whether or not he would like to take the new .401 S. L. rifle with him on a trip to the mountains can read the description in March Outer's Book and get more out of it than he will ever get from the Winchester catalogue description when it appears, I will warrant. Even then, nothing has been said as to the weight of the arm, or the weight of the powder charge, or kind of powder used, and no trajectory figures are given. The weight of an arm is important on a long hunt over mountains and among the crags where every

pound of weight tells with greater moment than the pounds added to the handicap in a horse race. I have no doubt that some of our mathematical friends could figure pretty closely just what one pound carried all day, up hill and down dale, over rocks and through windfalls and snow, would be, as expressed in physical energy, but I have a way of knowing that a rifle that weighs only six and one-half pounds is to be preferred to one weighing only one pound more. That "way" is to just try it, as I did this fall while hunting bear and mountain sheep in the Bitter Root Mountains and the Clear Water country of Idaho. The added weight of even a Marble axe was so noticeable that it was left at camp, and the number of cartridges carried was also reduced to a safe minimum. Therefore I say, we need fuller information on every one of those essential features that go to make up a rifle and ammunition that is superior to some other rifle and ammunition for a specific purpose, or a certain kind of hunting. For example, I am pretty well satisfied from what information our brother has given us concerning the new Winchester .401 that it will be a good rifle for grizzly or moose, if the figures given regarding the velocity and striking power are correct, but in my mind there should something have been said as to the kind of powder that is used and the weight of the charge, and why it is that the air-space could be reduced to the proportions it is in that cartridge and still be sufficient; for we all have been schooled to believe that dangerous pressures are the result of restricted air-space in modern high-pressure cartridges using our military and sporting powders. Then, we would like to know the weight of the arm, for the reason set forth above. If any of us are going after mountain sheep this spring too, we would like to know more of the trajectory of the bullets mentioned.

As may be remembered by some who happened to see a letter in February Outer's from me, I am the original champion of the Sauer-Mausser, bored, chambered and rifled for our 1906 U. S. Government cartridge. I also advocated the sharp, soft-point, Spitzer-shaped bullet, similar to that used in the Jeffery .333 Mauser. It now appears that this combination will shortly be on the market, and with the regular military bullet of several different weights, in addition to the soft sharp-point bullet and the round soft-point sporting bullet now put out by the U. M. C. Company, it will afford a combination for light weight, beauty of handling, flat trajectory, velocity and power that is not approached by any other to be found anywhere. While at this point I would like to call attention to a statement of Col. Roosevelt con-



cerning his experience with the new Springfield loaded with the regular military bullet, 1906 Model; which statement appears on page 269 March number *Scribner's*, as follows: . . . . .

"I had the little Springfield, and was anxious to test the new sharp-pointed military bullet on some large animal. The biggest bull was half facing me just two hundred and eighty yards off; I fired a little bit high; . . . but the tiny ball broke his back and the splendid beast, heavy as a prize bull, came plunging and struggling to the ground. The other bull started to run off. . . . then turned and galloped across my front at a distance of a hundred and eighty yards; and him too I brought down with a single shot. The little full-jacketed, sharp-pointed bullet made a terrific rending compared with the heavier ordinary-shaped bullet of the same composition." This coincides with what has been told me of the effect of the sharp military bullet on deer, though I did not have a chance to demonstrate it for myself at any time during my hunt last fall.

I have thought seriously of trying a Ross rifle, owing to its exceedingly flat trajectory and high velocity, as I have devoted most of my time to trying to get a mountain sheep while out on my hunts, but think the weight of the rifle and the falling off in velocity and striking power over 500 yards ranges would be against it for this work. The lighter, easier handling, safe Mauser with the power and trajectory of the 1906 model Government cartridge appears to me to be the ideal rifle for this work. It will also easily account for a grizzly, as it has sufficient power.

Let our manufacturers look well to the material put in their arm, keep the grade of finish up to a good standard, work out their weight and symmetry till they will handle easier and better, and last but not least, let us know something about what they are loading their cartridges with. Then too, they would make more friends at home and save a good deal of trade, discussion and trouble if they would otherwise treat riflemen with consideration as regards doing special work for them when requested to do so.

## SOME PROBLEMS OF THE SHOTGUN

I WAS much interested in your recent article dealing with the alignment of shotguns. I have long experienced the same difficulty with the double gun, in that the two tubes will rarely correctly center the charge with the same alignment. Some thirteen years ago I declined a new gun I had ordered which exhibited this defect in a very marked degree, and although this was strongly repudiated by the maker, I got full corroboration of it (and eventually the return of my money) by trials kindly carried out by your staff, and also Mr. Watts, of the London Sporting Park. I regret at the moment of writing I have not the details of the actual shooting.

Another instance was in the case of a pair of 30-inch choke barrels I had fitted to a favorite gun. The alignment of this pair of barrels was excellent as regards freedom from lateral deviation, but both shot decidedly low. I repeatedly proved this with target trials, and also at clay birds; in the case of the latter, so long as I concentrated my mind to look high (especially with the first barrel) all went well, but aligning at a "saucer" in the ordinary way meant shooting clear under it with the first barrel, which I clearly satisfied myself was the case, as by continuing the swing without altering the elevation frequently resulted in a kill with the second, which, had the gun been shooting up to its correct elevation, must have resulted in the charge going clean over it.

As the original stock and barrels of this gun suited me admirably for field work I decided on rather drastic measures for the new pair. Carefully supporting these at breech and muzzle, with top rib uppermost, I, by means of a screw press (operating about 13 inches from muzzle), screwed these barrels down till they took a decided "set," which they have ever since retained after many

thousands of shots. The result was immediately successful, both at the target and clays, the improved elevation being at once apparent in both cases. The excessive curve to which it was necessary to screw these barrels down before they would take a perceptible set resulted, as I expected, in the top and bottom ribs slightly giving way in a place or two; but these I afterward had stripped off by a 'gunmaker and re-soldered on, so, that they are now perfectly sound. I had this gun with me about a year and a half ago at your experimental grounds when you were kindly assisting me in the solution of some special loads and wadding, but I forgot if I called your attention to these tubes at the time.

Another cause of shooting low will often occur in proportion to the increase in weight of shot, which I can only attribute to the spring of the stock at the "hand." I have by me now an extra heavy 12-bore chambered for 3-inch brass cases, which is intended to shoot up to 1½ ounces, but with every increase of shot beyond 1¼ ounces, so it shoots proportionately lower. This gun is of such excellent quality, and so perfectly sound in the action, that I feel the spring must take place at the hand of the stock, as just mentioned.

I have also repeatedly noticed this same "springing" with many a pigeon gun that otherwise shot perfectly true with 1¼-ounce, but decidedly low when the 1½-ounce charge was used.

But perhaps your further trials may elucidate all this, for there is certainly room for a great deal of instructive experiment in this respect, more so, I think, than is possible to ascertain by shooting off-hand, a mechanical rest appearing to me to be necessary with some form of smoked surface and pointer that would record in chart fashion the diagram of "spring" with varying loads.—*Benton in Field (London).*





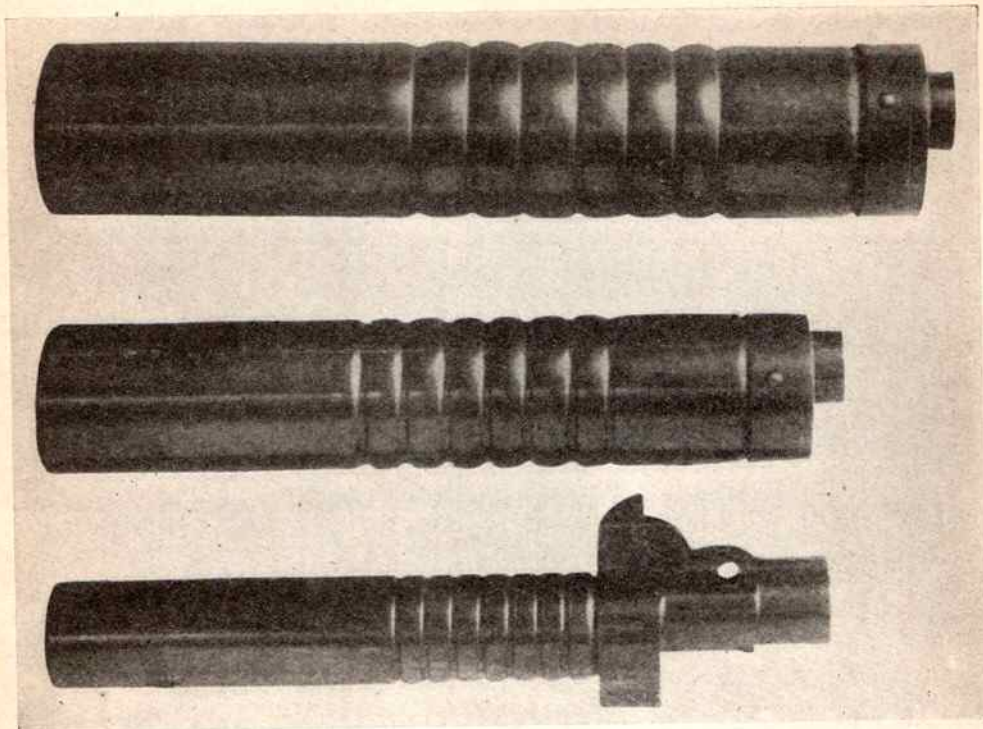
A 62-POUND BOY FIRING A SERVICE RIFLE WITH A RECOIL OF 75 POUNDS

## THE SILENCER'S DEVELOPMENT

THE sensations of surprise and astonishment with which the shooting world at first received the announcement of an invention claimed to effectively muffle the nerve-racking report of high power rifled arms, has given place to a feeling of satisfaction now that the device has made good. Not only has the Maxim silencer justified all the claims of its inventor, who by numerous other useful and original inventions has proved his claim to the confidence of the scientific world, but it has disclosed new and hitherto unsuspected opportunities for study and improvement along lines fraught with great possibilities. Designed originally as a device to partially muffle or change the character of the noise produced by powder burning weapons fired from the shoulder, the silencer incidentally developed several other equally desirable qualities not less welcome to the soldier and sportsmen. Exhaustive tests of the silencer, as conducted by both civilian and military experts, show a surprising uniformity of result so that the effect of its employment in the different departments of rifle work is no longer a matter of speculation or conjecture. Some of the advantages afforded by the use of the silencer are difficult to determine to an exact degree, for instance, the volume of sound remaining, is influenced largely by the wind, its velocity and direction, and by the terrain. Not so with the recoil which is a more constant factor and may be measured accurately. The Springfield armory tests gives the diminution of recoil through the use of the silencer as 33 per cent for the New Spring-

field, but the character of the recoil is so modified that it gives the rifleman the impression that it has been reduced from one half to two-thirds. No more convincing demonstration of what the silencer can do in the way of absorbing recoil could be published than the accompanying photographs which show master Hamilton Maxim, nine years of age, weighing but sixty-two pounds, shooting a service Springfield equipped with a Maxim silencer. Being unable to support the weight of the rifle off-hand, the little lad shoots from the prone or kneeling position with the result as shown on the accompanying target, a performance that would be highly creditable to the average marksman under any conditions, at a range of two hundred yards. The recoil of the New Springfield, as measured in foot-pounds, is considerably in excess of that of the old .45-70 Service Springfield taking the five hundred grain ball, yet we would scarcely expect to see a nine year old boy enjoying a little target practice with the old "Long Tom" which, on account of its kicking propensities was for thirty years synonymous with the government mule. The degree to which Mr. Maxim's invention modifies and eliminates the disagreeable and disturbing features of modern military small arms renders it possible to so readjust the age limits for military service that hundreds of thousands of fighting units may be added to the service roll; healthy men, long past the age limit for active field service and boys in their teens might in dire emergencies be utilized to man fortifications, leaving the more active troops for the more arduous





THE FIRST, THE SECOND, AND THE FINAL FORM OF THE SILENCER

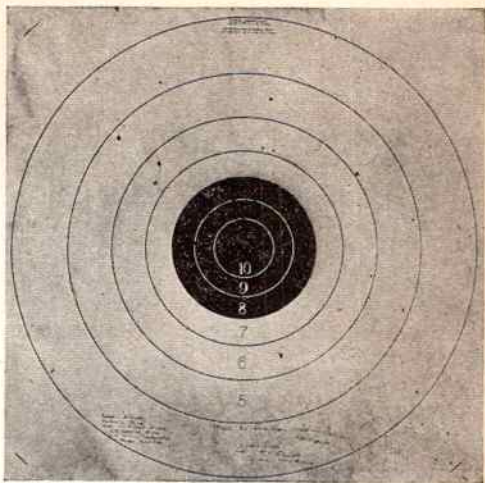
duties of the tented field. Facetiously speaking, should the silencer be adopted by the government and its use become general, we might even find an outlet for the surplus energy of some of the more militant of our suffragettes; as the silencer has subdued the service arm to a point which renders it possible for the gentler sex to use it without discomfort. Aside from neutralization of the excessive recoil by means of the silencer there are other features which will appeal strongly to veteran users of the service rifle. The repeated shocking of the nervous system by the sharp report, striking the unprotected drum of the ear is most exhausting, and the effect is noticeable on marksmen after a hard day at target practice. Those of us who have used service arms and have experienced the exhausting nervous strain of firing one hundred or more shots in a day will doubtless remember the feeling of lassitude that follows; let a man in this condition essay a score off-hand and compare results with the work done in the morning after a refreshing sleep and he will at once appreciate the advantages of this wonderful device. We are frequently asked what effect, if any, the use of the silencer has on the accuracy of the arm. To this we reply that exhaustive tests at the arsenal and at the United States School of Musketry at Monterey, show a marked improvement in accuracy over the scores made without the silencer. In making these tests the same rifles were used with and without the silencer; firings were conducted by the same marksmen, ammunition from the same lot was used and the conditions under which the tests

were made were identical. A comparison of the sighting records show that when firing with the earlier models of the silencer attached, the rifles would shoot slightly low and to the right requiring a change of sighting approximating one point in elevation and one point left windage for all ranges. Careful tests by the military authorities showed conclusively that the use of the silencer involved no loss of velocity; it was therefore decided that the added weight at the muzzle shortened the vibrations of the barrel causing the bullet to leave the muzzle at a lower angle. The effect was practically the same as if the rifle had been fired with a bayonet fixed.

The latest model of the silencer has been greatly reduced in length, diameter and method of attachment, so that corrections of sighting to compensate for change of balance are no longer necessary. There are many advantages to be derived from the use of the silencer in connection with the military arms; among those which have been definitely determined are, a material diminution of recoil, making it possible for growing boys and those unaccustomed to manual labor to practice with the service arm and shoot the heaviest hunting rifles without discomfort. By muffling the report at the firing point the volume of sound is not only considerably lessened but it is so diffused, that it can only be heard at a limited distance, making it difficult to locate the direction of fire with any degree of certainty. While firing at early dawn, at the twilight, or after dark, no muzzle flash is visible; under certain conditions of service which



military men will readily imagine, this particular feature of the Maxim silencer would be of incalculable value. Scientific rifle building has made the use of artificial aid to vision imperative, already the range of our service rifle extends far beyond the limit of unaided human vision. Thus the use of the silencer in conjunction with a long range rifle and a powerful telescope sight, renders the modern sharp shooter invisible, inaudible to the enemy and therefore practically immune from a return fire. We hear much of the disconcerting and nerve destroying effect of "return fire" on marksmanship of modern troops and no doubt it is a prominent factor among a great number of other reasons why it requires a man's weight in bullets to put him out of action. A cool calculating rifleman of the modern school having the instincts and training of a hunter, and equipped with long range rifle, telescope sights and a Maxim silencer, by taking advantage of natural cover, might easily locate himself in a position where almost immune from danger he could silence a battery or compel a regiment of the enemy to change position. Few inventions have made their way as rapidly, or attracted as much attention among thinking men as the Maxim silencer. It is less than a year since it was first announced to the world and already its name is a familiar household word on two hemispheres. It has passed the experimental stage and has successfully entered the utilitarian period of its existence. The silencer has been vastly improved since its first appearance without sacrificing any of its inherent advantages. The latest model is so small and so well designed and proportioned that it cannot interfere with the line of aim no matter what range the arm may be sighted for. The government has ordered five hundred of the new model silencers for immediate use and arrangements have been made with the Maxim company for a much larger supply. The Maxim Silencer is not a scientific toy to amuse one's self with nor yet a novelty that will be used for a while and cast



TARGET MADE BY YOUNG BOY USING SERVICE RIFLE  
EQUIPPED WITH SILENCER

aside; it is as much a part of the up-to-date rifleman's equipment as the sights on his barrel. Like most other meritorious inventions the silencer has met with opposition from self appointed world savers, supersensitive sentimentalists and morbid pessimists who are so far out of touch with their fellow men that they view every new invention with dread and suspicion. Considered in connection with firearms the Maxim silencer takes rank as one of the greatest inventions of recent years. It is a fitting companion for the modern high power rifle with its magic smokeless powder and distance defying telescope sights. Its field of usefulness is the civilized world; it has come to stay and we are glad it is an American.

## ANSWERS TO CORRESPONDENTS

### MR. TOPPERWEIN'S REPLY

EDITOR GUN DEPARTMENT: In your March issue of *Outer's Book* Mr. Chas. Askins criticises my statement as to long range shots with the rifle of small caliber, and seems to rather doubt the fact that I killed a running jack rabbit at 350 yards with a .22 caliber rifle.

If Mr. Askins will read the article in question carefully he will note that I do not claim that I could duplicate such a feat every day, as he puts it, but I merely related several instances of remarkable long range shots, some of which it was my good fortune to make and some of which I saw others make.

It would be perhaps a difficult matter for me to again duplicate this shot in question in the same number of shots and distance, but I will again say that I killed that particular "jack" at 361 steps, and that I have shot and killed a great number of jack rabbits and prairie dogs from ranges from 200 to 275 yards, and expect to do so again before I get out of the shooting game. Perhaps Mr. Askins has not had the opportunity to shoot and study the .22 rifle as much as I have, for I believe that anyone who has used this wonderful little arm to any extent will admit that it is much more powerful and is capable of much greater execution than the maker gives it credit for.



Mr. Askins is in error also in his analysis a Texas jack rabbit can "go some," but he cannot travel 45 feet per second, hardly, and I will also say that in order to connect with Mr. Rabbit at 350 yards it is not necessary to shoot 78 feet ahead and 50 feet over him. Again, Mr. Askins is a little wrong regarding the velocity of the .22 bullet, which he says is perhaps 600 F. S., and I will also say that a bullet fired from a Winchester rifle, using the .22 Winchester smokeless ammunition will, as a rule, go entirely through the body of a jack rabbit, provided it does not strike the larger bones in the animal.

Speaking of long range shots, Mr. Robert A. Kane, the very able gun editor of this magazine, and by the way one of the best all round shots and one of the best posted men in the ammunition and shooting game, a man who has hunted all over the United States with all kinds of rifles and for all kinds of large and small game, once killed a wild goose on the wing at a distance estimated 550 yards, at Menominee, Michigan, a few years ago, using a .22 Winchester Automatic rifle. Of course Mr. Kane's marvellous shot was in a sense a luck shot (like mine), and would perhaps have some trouble to again duplicate the feat every day, however, if I were the goose I would not take many chances with a marksman of Mr. Kane's ability.

The following shooting data may be interesting: At Camp Perry, Ohio, in 1908, during the rifle contests held there the rapid fire match was shot at 200 yards, Military target, 8-inch bull. Capt. Laudensack, using a .22 Winchester Automatic rifle, fired 91 shots in the time limit of 60 seconds, scored 82 hits on the target—only 5 shots being out of the three-ring. Wonderful shooting. But listen, last year at Sea Girt, N. J., the rapid fire match was shot at 300 yards using the 200-yard target. Capt. Laudensack again demonstrated what a wonderful gun the .22 Automatic was, by firing 91 shots in the time limit, scoring 84 hits on the target with an 18-mile wind blowing from the left. All the running scores at this meet on the rapid fire match were won by shooters using the .22 automatic.

If scores like above can be made in open competition at 300 yards on a target having an 8-inch bullseye, with such wonderful rapidity and in a wind at that, with a rifle shooting a bullet with atmost the same muzzle velocity as the .22 short, the feat of occasionally killing a rabbit, even if he is running at 350 yards, is not such a big thing after all.

ADOLPH TOPPERWEIN.

### SOME ROSS RIFLE QUESTIONS

EDITOR GUN DEPARTMENT: The article of Edward Crossman on the Ross rifle interested me. I noticed the advertisement of this rifle in the Field (English) and the velocity of the cartridge used was so high that I was on the point of writing the manufacturers when this sketch of Mr. Crossman's reached me, giving more information than I could possibly have received from the manufacturers. I must compliment Mr. Crossman by saying that of all American writers he is the most thorough and exhaustive in his analysis of a rifle and its performances—from his own standpoint. If I were

his sweetheart, though, I should keep a sharp eye on the young man. He reminds me of a young friend that a few years since used to write me pages about a girl with golden curls and the rest that went with them. He married the girl and they were divorced recently. He found that she had other qualities that go with yellow hair. Nevertheless, this rifle, with its three thousand feet muzzle velocity, impresses me. I have always been more or less of a trajectory crank, and before the days of nitro powder and jacketed bullets I tried to induce the Winchester people to chamber a .32 caliber rifle for a 75 grain shell. I intended to load the shell with a priming of shotgun nitro beneath the black powder and a paper patched bullet. The bullet was to have weighed 200 grains and I expected to secure a velocity of about eighteen hundred feet. Shortly afterward the real high velocity rifles appeared, and I have been pretty content ever since; possibly, indeed, I have grown conservative.

I am free to admit that a velocity of three thousand feet is great, provided, no other qualities are sacrificed to gain it. I believe in a ballistically well-balanced arm, and doubt if such a weapon can be obtained in a velocity of three thousand feet, unless there is an improvement in the quality of steel that goes into the barrels, in the method of jacketing the bullet, and in the powder. I notice the manufacturers claim an improved powder, but nearly all of them do that, and the breech pressure of seventy thousand pounds does not indicate it to me.

Here are some of the points I should like Mr. Crossman to cover before I buy one of these rifles: What size target will it make for fifty shots at two hundred yards, shot with fair rapidity, without cooling the barrel or cleaning? Will it maintain an even elevation at the distance, varying not more than four inches for any score? My requirements for a hunting rifle are that it shall keep ten shots in a six-inch circle at two hundred yards, after three hundred yards I do not care what it does. How many accurate shots will constitute the life of this barrel? The weapon costs considerable and I should not care to buy a new barrel every year. Will the metallic fouling be greater than that of the Government .30-40-220? How much will the rifle vary in elevation at two hundred yards when shot off-hand and with a muzzle rest? My belief is that the bullets will land about eighteen inches higher when shot with a muzzle rest than when fired off-hand, but I might be mistaken about this. Will the sighting have to be changed every time the hunter shoots from a different position, say one elevation for off-hand, another when the piece is fired from the knee, another in the prone, and another with a muzzle rest of any kind?

My Schuetzen experience has left me very skeptical about accomplishing any good work with a light rifle overcharged, and I should like to see a ten-shot score with this rifle where the position of the marksman was changed for every shot as might be the case in hunting, one shot fired offhand, a second with a rest, and so on. I doubt if the marksman could keep in a 20-inch at two hundred yards if he honestly sighted every shot for the center.

It matters nothing about the trajectory, in order to kill you first have to hit. If the hunter must first learn a different line of elevations of every



change in position, he will wear out this rifle before he can become familiar with its crankiness.

The trajectory illustration shown is very greatly overdrawn even for purposes of illustration. Why should the British, .303 have to be elevated to 65 degrees in order to give it a range of a thousand yards. This illustration doesn't illustrate, but seems merely intended to catch a sucker, that part of the public that can be fooled all of the time.

Yours,

CHAS. ASKINS.

### THE MAUSER RIFLE

EDITOR GUN DEPARTMENT: Will you please give me your opinion on the following questions? What do you think of the Mauser rifle in 11 mm. for sporting purposes? Would you advise the purchase of a Mauser 11 mm. 1888 or 1887 model, new gun, if bought at about \$5.00 or \$6.00.

Is the locking mechanism of that gun safe for smokeless loads? Could you give me the height (at 100 and 150 yards) of a bullet from that gun for 200 or 300 yards. If one purchased such a rifle would you advise the removal of the regular service sights and the substitution of the Lyman sights for the Mauser? The guns offered me are said to be the same as used by Russia in her late entanglement with Japan, and have about 36-inch barrels and a tubular magazine holding 9 cartridges. The gun can be altered to a sort of sporting model. If so altered, how long would you advise me to have the barrel if cut at all? From your experience, what is your advice as to the purchase of a bolt-action gun, that is, what caliber, kind, and model?

Thanking you in advance for whatever you can tell me, I am, Sincerely yours,

B. V. EDWORTHY.

[The Mauser rifle is certainly a very reliable and desirable arm for sporting purposes, if purchased in the recent models. I would not advise the use of anything heavier than the 8 or 9 mm. Most of the big game hunters of Africa use the 8 mm. in preference.

The Model 1887 and 1888 Mausers, selling for five and six dollars, are no doubt old second-hand military arms that have seen hard service. There would be some risk in such a purchase, as it would be impossible to say what condition they are in. The action and locking mechanism of any of the bolt systems are absolutely reliable for the cartridge for which they are intended. The 11 mm. is a .43 caliber and was no doubt designed for black powder cartridges, if so, neither the action nor the material of the barrel were calculated to withstand smokeless loads.

The trajectory of the 11 mm. Mauser in black powder would be about the same as the .45-70 Springfield which, when sighted for 300 yards would rise 29 inches, above the line of sight at 150 yards. The late models of the Mauser 8 and 9mm. are sighted point blank for 300 yards, the trajectory of the 8 mm. at 150 yards is 14.14 inches, and 9 mm. is 15 inches. If the latter arms are purchased, I would advise the substitution of the Lyman sights for those regularly issued.

Your letter states that the guns offered you for five or six dollars are 9 shot Mausers with tubular magazine and were used by the Russians in the

late war with Japan. This is evidently a mistake, as the Russian army used the Mossin-nagant rifle. It is a 7.62 mm., 5 shot arm, and is loaded with a clip. It was adopted in 1891. The Japanese used a rifle of native make, the Arisaka, 7.5 mm., 5 shot clip loading, adopted in 1897. I would suggest that you inspect the arms offered for sale closely before purchasing, and ascertain just which makes and caliber they are, and whether ammunition can be procured for them. I know of no military breech loading arm having a 36-inch barrel.

Cutting down a rifle barrel to a convenient length for sporting purposes is largely a matter of personal preference. Much depends on the length of the receiver, 24, 26 and 28 inches are convenient lengths for hunting barrels. I would suggest 24 or 26 inches.

There is little to choose between the various modern makes of bolt action rifles, all are safe and reliable. The difference between the various makes and models is largely a matter of unimportant detail, which may be left to the choice of the purchaser.—R. A. K.]

### .22 CALIBER AMMUNITION

EDITOR GUN DEPARTMENT: Being a regular subscriber of your valuable magazine, I feel free to come to you for information before placing my order for a well-known make of .22 caliber single shot rifle.

First. Which, in your opinion, is the most accurate cartridge for ordinary hunting and occasional target shooting, the .22 long rifle or the .22 Winchester rim fire?

Second. Wherein is a Stevens-Pope barrel superior to the regular Steven's or Winchester barrels as furnished on the standard rifles of either company.

Third. What is the difference in the .22 long rifle, the .22 U. S. Armory and the .22 Krag-Armory. I note from a Winchester catalogue that the bullet in the .22 U. S. Armory weighs 45 grains, while the bullet in the long rifle as you know weighs 40 grains. The list price of both cartridges are the same.

Fourth. Will a gun regularly bored for the .22 long rifle shoot the .22 U. S. Armory or the .22 Krag-Armory.

Fifth. Do you advise the use of .22 caliber greaseless cartridges in preference to the regular lubricated cartridge? And is there not more danger in the greaseless cartridges "leading" the gun?

G. M. S.

[The .22 long rifle cartridge in the various makes is considered by gallery experts to be the most accurate of all the .22 caliber family. The .22 caliber Winchester Rim Fire is a more powerful cartridge and better adapted for hunting purposes. It contains two grains more powder and five grains more lead, but it is seldom selected by target experts. I would consider the .22 long rifle the better cartridge for all round work. Another advantage is that a barrel chambered for .22 long rifle cartridges will handle all the different lengths of .22, except the .22 W. R. F., and the only difference between the .22 Krag, the .22 U. S. Armory and the .22 S. & W. long, is that in the latter three cartridges, the bullets are seated deeper in the shell,



the better to withstand handling and protect the lubricant. The bullet of the .22 long rifle is barely entered in the shell and secured with a light short crimp. This method of seating the bullet was a concession to the target and gallery shooting contingent. The amount of powder and lead is the same in all makes of the .22 long rifle, the .22 Krag Armory, the .22 U. S. Armory and the .22 S. & W. long, and they with the various makes of .22 long and short cartridges may be used in barrels chambered for the .22 long rifle cartridge.

I think you are mistaken as to the weight of the bullet in the .22 U. S. Armory cartridge, as made by the Winchester Co. I have their catalogues Nos. 74 and 75, both of which give the weight as 40 grains. Where a great number of shots are to be fired, as in snap shooting, I would advise the use of smokeless and greaseless cartridges, there is little or no danger of leading. For target shooting at distances approximately the range of .22 caliber ammunition, or where extreme accuracy is desired as in gallery shooting, I would strongly recommend the black powder cartridges. My experience has been that there is greater danger of fouling with black powder than of leading with smokeless and greaseless ammunition. It would be difficult to say wherein the Pope-Stevens barrel in .22 caliber is in any way superior to the regular output of first-class armorers. I think the difference, if any, exists, is due to the extreme care exercised in straightening the special barrels and finishing the bore. If my memory is not at fault, the Pope system of rifling has much narrower lands than the big armorers use. I would not, however, attribute superior accuracy to this cause, as many of the standard barrels turned out by the regular factories show equal accuracy.—R. A. K.]

### COMPARATIVE VELOCITIES

EDITOR GUN DEPARTMENT: Will you please give me the velocity and range of the following arms: The New Springfield, and the most powerful military arms used by other nations, the Ross .280 caliber, the Mauser, the Mannlicher, and the New Standard Automatic, also the Model 1910 Winchester? I would like a good description of the Ross rifle. Do you think it superior to the New Springfield and if it is better or worse give reasons. Can you tell me if the new gun upon which the United States Ordnance Department is working will be more powerful than the New Springfield and what changes of sights and ammunition, if any, will be made? Is the Colt .45 caliber automatic pistol the most powerful of its kind made at present and if not what one is? Please give its approximate range and velocity.

Very truly yours,

HOWARD MEEKER.

[Answering yours of March 10th will say: The velocity and trajectory of rifles vary with the weights of bullets used. The velocity of the New Springfield with the 150 grain bullet is officially given as 2700 foot-seconds. The extreme limit of range is 5465 yards; this is only attained by firing at an angle of 45 degrees. The New Springfield has a mean absolute deviation of 5.9 inches at 500 yards, 13.3 inches at 1000 yards, 24.8 inches at 1500

yards, and 38.5 inches at 2000 yards. The principal changes made in the ammunition for the New Springfield was a slight shortening of the shell and reducing the bullet from 220 grains of the 1903 model to the 150 grain bullet of the 1906 model which is the present service cartridge. The Ross rifle in .280 caliber has a velocity of 3000 foot-seconds. You will find a most exhaustive description of the Ross rifle in the March, April and May numbers of the Outer's Book.

There are several automatic rifles being tested by the ordnance department, none of which have as yet been adopted, but it is safe to predict that no arm less powerful than the best used by other nations will be accepted by the United States Government. Germany uses the 8 mm. Mauser with an extreme range of 4500 yards and velocity of 2000 foot-seconds. France has adopted the Lebel rifle 8 mm. Great Britain uses the Lee-Endfield 7.7 mm. Those arms vary but little in extreme range, killing range or velocity and they are the most powerful military arms used abroad. The .401 Model 1910 Winchester was designed for a hunting arm. With the 200 grain bullet it has a velocity of 2142 foot-seconds and a muzzle energy of 2038 foot-pounds. The Colt .45 caliber automatic pistol is the most powerful arm of its type made today. It has a velocity of about 1163 foot-seconds. Its range would depend on the degree of elevation, probably the extreme limit would be from 1500 to 1800 yards. The effective killing range would be about one-third of this. The New Standard rifle in .35 caliber, which is the largest made by the Standard Company, has a muzzle velocity of 2000 foot-seconds, muzzle energy 1776 and a range for accuracy of 700 yards.—R. A. K.]

### SWISS VETERLIN AMMUNITION

EDITOR GUN DEPARTMENT: Will you kindly tell me where I can procure a supply of .41 caliber bottle-necked cartridges to fit the Swiss Vetterlin military rifle? I have not been able to procure reliable ammunition for this arm. I have used some of the regular ammunition made in Switzerland, but they have proved unreliable. I would like to get some of domestic make. Can you direct me to some dealer or manufacturer who can furnish me with dependable ammunition? Yours truly,  
A. F. CLIFFEL.

[The Winchester Repeating Arms Co., at New Haven, Connecticut, or the U. M. C. Co., at Bridgeport, Connecticut, can furnish you with domestic made cartridges for your .41 caliber Swiss Vetterlin rifle. The cartridges are rim fire, have a copper bottle-necked shell and contain .55 grains black powder and 310 grains lead. You may be able to procure this ammunition of local dealers in your home town.—R. A. K.]

### A WORN OUT RIFLE

EDITOR GUN DEPARTMENT: Having noted your willingness to assist your brother riflemen in trouble I come to you for advice. I have a .22 caliber Winchester Repeater taking the .22 short only that has been shot a great number of times. After



cleaning it and shooting three or four shots I can frequently see the rifle ball going through the air for a short distance. I cannot understand this as the barrel is not leaded and I clean it every sixteen shots. Would it be allright to have a gunsmith or anyone who could do the job properly, drill out a little of the rifling at the chamber so that a .22 long or .22 extra long will fit in it? The extra long would of course be too long to work through the magazine. Otherwise the rifle seems to be allright.

Yours,

CHARLES HOCKING.

[From your description of your trouble I am of the opinion that your rifle is worn out; possibly it has been worn smooth at the muzzle from too frequent cleaning. If these conditions exist there would be a great loss of velocity. If the rifling is badly worn, to lengthen the chamber and use stronger cartridges as you suggest would only add to the trouble. A sure indication of a bell muzzle or worn out rifling is tumbling or keyholing of the bullets. If the rifle is worn out the only remedy is a new barrel; if the rifling is still in good condition and the muzzle worn large from excessive use of the wiping rod, a possible remedy would be to cut from one-half to an inch off the muzzle end of the barrel. I do not understand your seeing the tiny bullet in its flight unless your barrel is worn so large as to greatly reduce the speed of the bullet. I have frequently watched bullets in their flight from large bore black powder rifles under certain conditions of light while engaged in target practice, but have never seen a bullet as small as the .22 in flight.—R. A. K.]

### TO PREVENT FOULING

EDITOR GUN DEPARTMENT: I come to you for a little information in regard to Colt's revolvers. I have a Colt single action Frontier .44 caliber, and a Colt .41 double action. I have shot about two hundred rounds from each of these arms. In cleaning them some time ago I noticed that there was a groove in the frame of each revolver between cylinder and barrel on the inside of the upper bridge of the frame. Thinking this must have been cut by escaping gases of different powders, I wrote the Colt people regarding it and they said it was intended as a gas cut. The one they referred to, however, is on top of barrel instead of directly over the joint between cylinder and barrel. I would like to know if the flash of powder or the escape of powder gases at this point is injurious to these weapons and if so is there any method of preventing the injury. Respectfully,

DAN MILTENBERGER.

[These grooves were cut to prevent an accumulation of fouling between the inside of the upper bridge of the frame and the forward outside circumference of the cylinder. You will notice that the inside of the frame and the outside of the cylinder are very close together. The groove cut in the frame at this point and the beveling on the front end of the cylinder both aid in preventing excessive fouling when using black powder. One of the good points for which Colt's revolvers were noted before the introduction of smokeless powder was that more shots could be fired from them without

cleaning than from any other arm. The space between the upper part of the barrel and the inside of the frame, the broad milled cut on the inside of frame and the narrow cut to which you refer were all designed to facilitate cleaning, permit escape of gas and prevent clogging. The flash of powder or escape of gas at this point cannot injure the arm in any way, unless it is neglected and allowed to rust.—R. A. K.]

### A BOOST FOR THE PARKER

EDITOR GUN DEPARTMENT: We read a great deal about the different guns made at home and abroad, but I wish to give a few facts about the Parker gun. First, I wish to make it plainly known that these lines are my own voluntary act, and not solicited by the Parker people in any way. I am not prejudiced against any make of guns, as all standard makes are dependable weapons, but in my opinion the Parker gun is the best gun made in America, if not in the world. I have used a few different makes of guns, but I am firmly convinced that the Parker gun is the standard of excellence. I use a Parker and it is the finest and smoothest shooter that I ever shot.

Parker guns are famous the world over for their wonderful shooting qualities, and also their beautiful outline and finish, faultless balance and light recoil; which are the things required to make up a good gun. When ordering a Parker gun of a dealer, when it was required to built to order, I have written to Parker Brothers, Meriden, Connecticut, telling them just how I wanted the gun made, for fear that the dealer might make some mistake in transferring the order. By letting Parker Brothers know just how I wanted the gun made up, it was sure to come exactly as ordered in every respect. You always get a square deal with the Parker people. All that you have to do is to let them know just how you want the gun made. Dealers are always very careful to send in orders exactly as given to them by sportsmen. Sportsmen will be interested to know that the best shooting done at Chicago Illinois, during the Grand American Handicap held at that place from June 22 to 25, 1909, was done by the Parker gun. Mr. Frank Fisher of Eagle Grove, Iowa, won the Preliminary Handicap, and Mr. Fred Shattuck, of Columbus, Ohio, won the Grand American Handicap, both with a Parker gun. Mr. Fred Gilbert, of Spirit Lake, Iowa, won the Professional Championship with a Parker gun, making the fourth consecutive winning for the Parker gun. The Parker gun also won the high general average for the entire tournament. It is an acknowledged fact, when we often hear it said by true sportsmen: "The old reliable Parker gun, the best by test." Yours very truly,

A PENNSYLVANIA SPORTSMAN.

### MAY CAUSE FOULING

EDITOR GUN DEPARTMENT: I have a Winchester rifle, model 1895, using the .30 rimless Government Model 1903 cartridge, 220 grain soft nosed bullet. Can one use the .30 model 1906 cartridge 150 grain bullet in this gun without injury to the gun, and



would they be accurate, and what is the difference in velocity and energy of the two bullets? Yours,  
V. E. V.

[The Model 1906 ammunition can be used in guns chambered for the 1903 Rimless cartridge, but as the 1906 cartridge is slightly shorter than the 1903, there is a little gap at the mouth of the chamber which causes the liability of rapid fouling of the barrel unless great care is taken in cleaning after shooting. As long as fouling is absent, there would be hardly any difference in the accuracy of the two cartridges.]

The Model 1903 cartridge as the Winchester Company loads it for sporting purposes, is equipped with a 220 grain soft point bullet, and the ballistics of this ammunition are identical with those of the 1903 cartridge, which are as follows: Weight of bullet, 220 grains; velocity of bullet at 50 feet, 2163 foot-seconds; energy of bullet at 50 feet, 2286 foot-pounds; penetration of bullet in  $\frac{1}{2}$ -inch pine boards at 15 feet from muzzle with soft point, eighteen boards; with full metal casing, sixty-eight boards.

The government now loads the 1906 cartridge with a 180 grain bullet. We do not know the ballistics of this weight of bullet. Of course, in view of the fact that the 1903 cartridge is longer than the 1906 chamber, the 1903 cartridge cannot be used in a rifle chambered for the 1906 cartridge, but the 1906 cartridge, as loaded by the Winchester Company, with the 220 grain bullet, can be used in their rifle chambered for the 1903 cartridge. The muzzle velocity of the government make of ammunition with the 150 grain bullet is 2716 foot-seconds. There are several different weights of bullets used by the various manufacturers in the 1906 ammunition, but I cannot at present give their ballistic performance.—R. A. K.]

### UNIQUE TYPES OF ARMS

EDITOR GUN DEPARTMENT: Will you please tell me what .22 caliber repeating rifle you consider the very best in the world, regardless of cost?

What company manufactures rifle canes, or where can I procure one, and about what will it cost?

I have an old single action revolver, a .32 caliber rim fire with the name Aetna stamped on the barrel. What company formerly made this brand of revolver?

Where can I get a belt made in the same style as the Mills Woven Magazine, model of 1909, but made of soft leather? Respectfully,

C. S. WARD.

[It would be impossible and unfair to say which is the very best .22 caliber rifle in the world, as each make and type of arm has some feature to recommend it for a certain line of work, that may be lacking in the others. There is no appreciable difference in the shooting qualities of the .22 caliber arms as made by armors of established reputation. The Marlin Co. makes the only under lever action .22 caliber made in America. It is a take down and weighs from 5 to 5½ pounds, according to length of barrel. It can be had with barrels 16, 24, 26 and 28 inches in length. Should you prefer a trombone action, the Marlin No. 20

is a well made and reliable arm. It can be had with 23-inch barrel only, is a take-down and weighs four pounds 2 ounces. The Winchester, Remington and Savage companies also make trombone action .22 caliber repeating rifles, which, like the Marlin rifles described, will handle the .22 short, long and long rifle cartridges in one gun.

I do not know of any company in America that manufactures rifle canes regularly; they can, however, be purchased of Francis Bannerman, 501 Broadway, New York, and possibly from Shoverling, Daly & Gales, 302 and 304 Broadway, New York. I cannot give price, as articles of that nature are not listed regularly. You can get a soft leather magazine clip cartridge belt of almost any kind from Bannerman. I cannot at present give you any information as to the manufacturers of the Aetna R. F. revolver. It was probably made in New England by one of the earlier makers such as the Forehand & Wadsworth, who, at one time, made the Lambert rifle cane, revolving rifles, pepper box pistols, and many other unique types of fire arms. Perhaps some of our readers can tell us who made the Aetna Rim Fire revolver.—R. A. K.]

### FOR SHORT RANGE WORK

EDITOR GUN DEPARTMENT: Please tell me the range of a single shot pistol having a three and one-half-inch barrel?

What is the twist of the rifling in a Savage Junior Model 1904, .22 caliber rifle? Yours truly,  
FRANK SCANLON.

[Neither great range or accuracy can be expected from a pistol barrel 3½ inches in length. Black powder arms with barrels as short as 3½ inches are pocket models and designed for defence at short range. Fairly good work can be done with them at from ten to twenty-five yards. The Savage rifle, Model 1904 Junior, and Model 1905 Target, will take .22 short, long and long rifle in one gun. They are bored with an 18-inch twist.—R. A. K.]

### THE MATTER OF LOAD

EDITOR GUN DEPARTMENT: I shoot an L. C. Smith, 12 gauge, 28-inch barrel. The right barrel is a true cylinder bore (150 No. 7½ shot in thirty-inch circle, using 1¼-ounce of shot). As I am only a medium shot will you tell me what load to use that will give me the most chances to kill in shooting quail? Also what load with that barrel to use on rabbits? How much shot? What size shot? And how much dense smokeless powder? I want the load that will give the longest killing range and the best pattern. Will No. 6 shot carry farther than No. 8? I have been using 1¼-ounce of shot. Is that too much? Yours truly,  
J. P. STEWARD, JR.

[Your 12 gauge L. C. Smith, with 28-inch barrel right, true cylinder, left, full choke, is a good combination for the average sportsman for general use.

There is an average of 431 pellets of shot in 1¼ ounces of No. 7½ chilled shot. Your cylinder barrel should target about 170, and your full choke about 320 pellets. These figures will vary with the



amount and kind of powder and character of wadding used. Soft wadding will be less liable to spread the shot. I think that for quail and rabbit shooting, a good, fast load is desirable. I would suggest a repeater, or nitro club shell, or if you prefer a better grade, use a Winchester leader, or a U. M. C. Arrow. 25 grains of ballistic (dense powder) covered with one grease proof and two  $\frac{1}{4}$ -inch pink edge wads over the powder, 1  $\frac{1}{4}$  ounces of No. 8 shot covered by a thin cardboard wad. The load may be made faster by reducing the shot charge to an ounce, but the pattern will not be as close. The above load will be found well adapted to quail, rabbit and ruffed grouse. The same load with 1  $\frac{1}{4}$ -ounces of No. 7  $\frac{1}{2}$  chilled shot is an excellent combination for targets, and with No. 7 shot for live pigeons, for the latter the powder charge may be increased to 26 grains. No. 6 shot will carry farther than No. 8, but will not give the density of pattern.

There are 511 pellets in 1  $\frac{1}{4}$  ounces of No. 8 and but 271 in the same charge of No. 6. A cylinder bore should pattern 40, a Modified choke 60, and a full choke 75 per cent. To get the very best results, every barrel should be tested to determine its proper load.—R. A. K.]

### THE SHOTGUN BUTT

EDITOR GUN DEPARTMENT: Please answer the following questions: Would you advise the use of a shotgun butt on a rifle and in what way would you consider it superior to the rifle butt? I have heard and read that it is much better to get a .22 rifle that is chambered for a certain length of cartridge only, but do you think that it makes so very much difference to the average shooter so long as the chamber is kept clean? Please give me a good medium range load for my New Officers' Model Colt revolver. The ones I am now using do not seem to ignite promptly. What is the trouble? Yours, L. K.

[The shape of a rifle butt stock is largely a matter of individual preference. There may be a slight advantage in the rifle pattern when shooting from the saddle while the horse is in motion, or to a novice while attempting to manipulate a lever action arm from the shoulder, but in the majority of cases the shotgun butt will be found to possess certain distinctive advantages.

In shooting with a light rifle at varying angles, such as snap and wing shooting, the advantage of the shotgun butt with its straight butt plate is at once apparent, as the extra motion required to fit the shoulder into the crescent shaped rifle stock is unnecessary. The broad stock and straight butt plate of the shotgun model, when thrown hurriedly to the shoulder, quickly finds the position most natural to the marksman and enables him to use arms having considerable latitude in drop and length of stock without discomfort. There is a noticeable decrease of recoil in rifles taking the more powerful cartridges when equipped with a shotgun butt of heavy dense wood. This may be accounted for by the fact that the impact of

recoil is diffused over a wider area of the shooter's shoulder, and by the counter-acting influence of inertia, which is increased with every ounce of weight added to the gun.

It is a fact that the best results can be obtained from a .22 caliber rifle chambered for one length of cartridge only. When using short cartridges in an arm chambered for long, fouling will sometimes accumulate between the short shell and the mouth of the chamber. When this condition is permitted the fouling will soon extend along the rifling, causing mutilation of the bullets and consequently inaccuracy. There is, however, a great advantage in being able to use cartridges of different lengths and power in one gun, while a little care and watchfulness will prevent fouling. The difference in accuracy would not be noticeable to the average man in off-hand shooting.

The trouble you are having with your reloaded ammunition for the .28 caliber Officer Model Colt is evidently caused by using a black powder primer for a smokeless powder load. The proper primer for smokeless powder in the .38 S. & W. Special cartridge is the U. M. C. No. 6, or the Winchester 1  $\frac{1}{4}$  W. Try a 2 grain load of Laflin & Rand Bullseye smokeless powder; be very careful not to increase the load. If you do not find this satisfactory, tell me your trouble.—R. A. K.]

### THE THREE-BARREL GUN

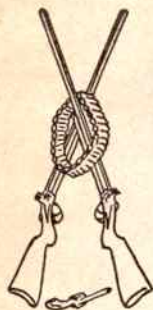
EDITOR GUN DEPARTMENT: Having on several occasions seen in the different American sportsmen magazines inquiries in regard to three-barrel guns, the undersigned wish to state that we both own three-barrel guns made by the Royal Gun Company, Wheeling, West Virginia, with factory at Moundsville, W. Va. Our guns are both 16 gauge shot barrels and .25-20 single shot rifle; length of barrels, 28 inches. The guns made by this company are beautiful arms, made in different calibers and lengths, and as for finish they are not surpassed by any guns made, price considered, of course. As we have had considerable dealings with the Royal Gun Company, and therefore know whereof we speak, we most heartily recommend them to anyone wishing a high grade American made arm, modern in every way, and built to suit and shoot for business as well as pleasure. The advantage of having a rifle as well as shot gun with you always on your hunting trips ought to be plainly evident to all lovers of hunting and especially so when cost and weight of a Royal three-barrel gun is about the same as a good double barrel. Hoping you may be able to use this testimony and expecting to see The Royal Gun Company's add in your valuable magazine, we remain, very truly yours, C. F. F. MICHELSEN,

H. B. WUNRATH.

### B. O. L. T.'s ADDRESS WANTED

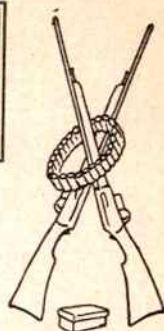
We have a long and interesting communication from a contributor who signs himself "B. O. L. T." which we cannot print unless we have the writer's name and address. We would like to communicate with the writer.





# GUNS AND AMMUNITION

EDITED BY ROBERT A. KANE



This department is intended to be a place for the exchange and discussion of views on any subject pertaining to arms and ammunition, from which no one with an idea to advance shall be barred. The only conditions are that the opinion must not be manifestly absurd, that it be expressed in courteous language and that no personalities be indulged in. Each opinion is printed for what it is worth and its publication does not commit the editor to the view expressed. The widest range will be permitted and our readers are invited to make free use of these pages, but it is important to remember that *under no circumstances will personalities ever be permitted.*

## THE TELESCOPE SIGHT

PART I

By EDWARD C. CROSSMAN

THE grizzly has joined the dodo-bird over the horizon; the big-horn is to be found only on the highest of the high mountain ranges; the antelope has disappeared from the sportsman's list of fair game; even the deer has retreated before the annual hunter army and is no longer to be found in his old haunts.

If his quarry be bear or sheep or goats or elk, the sportsman must seek the western mountains, the deepest woods or Canada and at the end of his gameward trek, has not more than a half-chance of landing the desired trophy.

Politician-made laws; neglect such as lets Wyoming's elk starve to death by the thousands with each hard winter and ignorance of a single one of the hundreds of precautions that European sportsmen take to preserve their handful of game—all these things are more responsible for the disappearance of the game than straight hunting by law-abiding sportsmen. The scoundrelly hide-hunters did for our buffalo; market hunters thinned out our duck flights while pot-hunters, "sooners," and bounty-free, four-legged vermin is disposing of what little game we have left.

Therefore when the sportsman goes afield to compete with the other game-seekers who have so much the advantage of him, in the endeavor to secure a specimen of our fast disappearing game, he cannot afford to overlook a single item that may legitimately help him in his quest. It is possible that this article may suggest an aid to the desired end.

Our present day rifles, more particularly those of the military type, are accurate at ranges where the rifles of thirty years ago would not even pitch their bullets. Velocities have crept up and up, trajectories have been accordingly flattened and errors in judgment of distance have become less costly.

Military tactics have changed to meet the improvement in rifles. Fighting is commenced at distances where even the old field guns would not

pitch their shells. The Boers in South Africa persuaded the English by divers object lessons that a new order of things was at hand and that a column of companies at 1000 yards was a thing to be devoutly desired by the other fellows.

With the thinning out of our game and the knowledge of the powers of the hunter that seems at times to be really spread about among wild animals, the tactics of the hunter have also changed. Long shots are becoming more and more the rule instead of the exception, for the reason that shots of any kind being scarce, it may be a case of take the long shot or none.

With rifles of the old black powder type, with low velocity, corresponding high trajectory and equivalent probability of missing the object fired at, shots at game more than 200 yards distant were rare. Nor was there much occasion for taking chances, game was plentiful and it was preferable to pass on and seek something nearer than to alarm the game of the district by a fruitless shot.

With rifles of the New Springfield type, such as the Ross .280, or the .333 Jeffrey-Mausers or the .318 Westley-Richards express or the Rigby-Mausers with its 3,000 feet seconds, the most glaring errors in judging distance over ranges up to 400 yards will hardly score misses on animals the size of a bear.

With the arm sighted for 250 yards, taking the Ross .280 as an example, the bullet would not rise high enough at any of the intermediate distances to miss a bear were the sights pulled for the center of his shoulder. With the bruin 300 yards away, 50 yards beyond the distance for which the rifle was sighted, the bullet would strike but four inches below the point of aim.

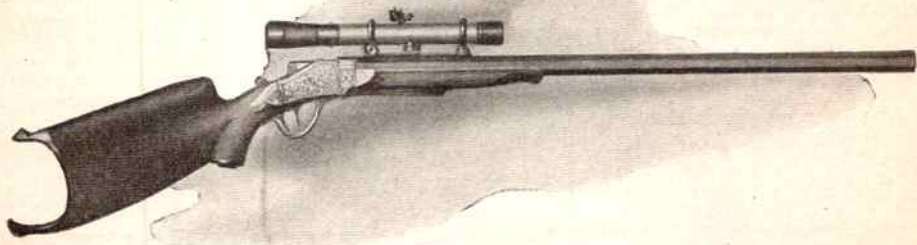
In other words, a Ross .280 or a Rigby-Mausers of the 3,000 foot seconds class could be fired down a straight pipe nine inches in diameter and the bullet would travel over 300 yards without falling enough to strike the bottom of the pipe or being directed high enough to strike the top. It is hard



to find a better way to illustrate what is meant by a flat trajectory.

Such rifles are accurate enough to put all their shots in a three-foot circle at 1000 yards, and possess enough striking power to kill game 600 yards away. There remains but one thing to make long shots effective, an aid to the vision, both in seeing the quarry and in aligning the sights upon it. Metallic sights will not do the work, the telescope will.

which a well-known shot of that time wagered that the best rifle made would not place ten shots on a dinner plate at 50 yards, using the new sight as a means of directing the rifle's muzzle to the target. Photographic lenses were improved year by year, anastigmats took the place of the old rectilinears as the rectilinears took the place of the plain achromatic lenses and still our scope makers plodded along with cheap, uncorrected lenses, not even as good as the cheaper grade of photo-



THE GOERTZ "CERAR" SIGHT

The idea of the telescopic sight is not new. We know of its use by hunters of the plains country as far back as the time of the Civil War. Its advantages are apparent. In spite of its long term of service in the hands of a few cranks about the country it is comparatively rare on a hunting rifle.

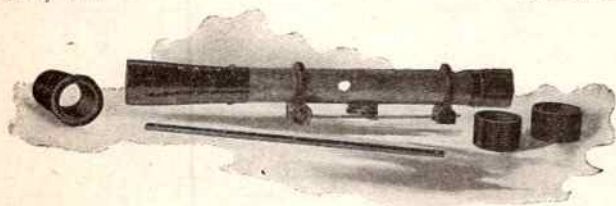
The reason thereof is not hard to find. Telescopic sights are scarce because good ones are scarce. Shaky mountings, designed apparently by the village blacksmith and executed by his apprentice, botchy optical construction with easily breakable cross-hairs, unstable adjustment of the lenses, apparently made by a pop-bottle factory, poor illumination, small field, uncorrected lenses that produced color fringes and very little else visible to the user—in short, instruments that were as easily broken as a Sevres cup and unsatisfactory when in their whole condition, comprised the telescopic sights from which the American sportsman could make his selection—but which he rarely did.

graphic objectives and stuck their freaks to high power, hard-kicking rifles with mounts consisting of wobbly clock springs and thumb screws. If the rifle happened to get a hard knock on a hunting trip, the owner delivered the funeral oration of his telescope sight in language that he didn't use in his position as superintendent of the Sunday school and went back to metallic sights.

The problem of mounting a telescope to a rifle is one not easily solved. True, an infinitesimal part of the ingenuity used to perfect our Hoe presses and our gasoline motors would have solved the problem *very pronto*. But working out the optical part of the telescope sight to a satisfactory ending is not hard and the fact that our makers are just now commencing to wake up does not mean that telescopic sights equal to our fine field glasses could not have been produced before in this country.

The first step forward in recent years was the decision of the United States Government to furnish its troops with the telescope sight and the meeting of the Government requirements by the Warner & Swasey Company of Cleveland with their splendid prismatic glass. It is the first respectable American telescope sight. May it be but one of a large and illustrious family. The Government has purchased 1000 of these sights at a cost given as \$41.00 each, for the use of the best shots of the regular army and the National

Guard. Ninety per cent of the reports received from the users of these sights have been favorable, while the wonderful shooting of Captain Casey with one of the first turned out may be recalled. Casey laid down at an unknown distance from a regular Government "C" target, twelve feet long by six high with three foot bullseye, dropped his first shot so close to the target that it ricocheted into the "3" ring below the bull, planted his next one directly into the "4" ring and then shot eighteen



THE CENTAR SIGHT DISMOUNTED

Telescopic sight factories came and went, the coming attended with the blare of trumpets, the going with the tears of their creditors and yet the telescopic sight that would give satisfaction on the sporting rifle, failed to appear.

One of the old companies that promised much and aroused the hopes of the believers in this form of sight was the old Cataract Company which put out a glass that looked fine, fitted with micrometer mounts fore and aft and amidsthips—and with



straight bulls at a distance of what he afterward learned was a mile.

The Government sight is of course complicated and with finely graduated elevating and traversing discs, adding to its cost. It is of the prismatic pattern and is six power. This power would be too great except for the use of a military shot, using it constantly in the prone position where the rifle is held steadily.

With simple mountings, simpler devices for obtaining lateral and vertical movement of the scope, this glass should be obtainable for about \$25.00 and it is to be hoped that the makers will see their way clear to market it in this form.

Thousands of telescope sights are sold annually in the United States for use on target rifles and for use in shooting small game with rifles of light recoil. For this use the popularity of the scope is steadily increasing. But put the same telescope that gave excellent results on a heavy target arm, on the



THE WINCHESTER TELESCOPE RIFLE SIGHT

rifle for your big game shooting trip, a rifle with heavy recoil and that is perhaps treated with a considerable less degree of tenderness than the target arm. The cross-hairs will break, from the jar of the recoil, the mountings will get out of adjustment from the occasional falls the rifle may get and the user will be lucky if the whole "kit and caboodle" doesn't go to smash through an extra hard fall of the rifle.

Strangely enough, the development of the telescope sight has been, in the United States, for target rifles principally. In Europe the reverse is true, the glasses there being designed primarily for game shooting and that on rifles of heavy recoil.

A glass that is built to give satisfactory service for game shooting, having brilliant field, and one of large size, strong and permanent mountings and of construction substantial enough to stand the jars to which the hunting arm is occasionally subjected, can be very easily adapted to target work. Its only lack in this respect is that it has not the finely adjusted mountings that will allow small changes on the target.

But the converse does not follow—that a scope that is satisfactory for target work is necessarily satisfactory for use on a hunting rifle. A glass with weak mountings, small and dark field and rather shaky lens and crosshair design will give perhaps good results, at the target, if it is treated tenderly. For hunting it is entirely unsuited.

There are several glasses of American make that give good satisfaction for use in target shooting. The best of these is the new Winchester scope, which embodies improvements both optically and in other respects that our glasses have heretofore lacked. Among these good points may be mentioned the splendid, brilliant field of the glasses, the fine mountings, the different forms of reticules—crosshairs—and the micrometer adjustment of the object glass. This latter is particularly useful

for those riflemen who desire to shoot both indoors and out and who therefore want to make quick changes in the focus of their telescopes from perhaps 200 yards to 50 feet. The illumination of the Winchester glass is very fine, the mounts are being worked out to give good results on any rifle made and it may be regarded as the best American telescopic sight yet produced—outside the Warner & Swasey Government glass.

But it should be remembered that a glass entirely satisfactory for target work may not be the thing for a hunting rifle.

The field of the Winchester scope, while brilliant, is too small for a hunting glass, nor are micrometer mountings indicated for rough usage. For comparison, the best Winchester glass of five power gives a field of five feet, eight inches, at 100 feet. The standard German glasses of the same power give a field of ten feet. The Winchester three power glass gives a field of four feet, ten inches at 100 feet.

The German glasses give a field of about seventeen feet with this power. Comment is unnecessary.

There is not a single glass of American manufacture, outside the Warner & Swasey that is of the modern, prismatic, large field type. To get a satisfactory hunting glass we have to go to the Germans, who lead the world in every branch of optical construction from field glasses to photographic lenses.

For hunting, the telescope sight enlarges the game, making the animal plainly visible and enabling the cross-hair to be put anywhere on its body with some degree of certainty. It takes away the strain of endeavoring to focus three different things at once, necessary with the open sight. It shows game where the light is poor or where it blends with its surroundings in such a way that it could not be made out over metallic sights.



THE MICROMETER ADJUSTMENT OF THE OBJECTIVE LENS

It reduces the excuses of Tom Fool for shooting at a fellow human under the impression that the victim was a head of game. It acts to some extent as a range finder and last but not least, gives the man with eyes too old to longer use the metallic sights, a renewed lease of life in the rifle game.

On the other hand it is costly, it adds weight to the rifle and adds a little more chance for brush or limbs to catch. It may interfere to some extent with the action of the rifle unless properly mounted



and it may bang the shooter in the eye unless the glass is so arranged optically that the eye relief is great enough to do away with this danger.

A properly built and mounted scope will stand the racket as well as the rifle itself. Carried in its scabbard, as it should be in places where shots at game are not imminent, it is no more of an encumbrance than a small hatchet or knife. The Germans have worked out the mounting problem so their scopes do not interfere with even a bolt action, the hardest of all rifles on which to mount a telescope. The principal objection is their cost.

A glance at the construction of a telescope sight may be of interest as the inner workings of this form of sight seem to be a mystery to many rifle lovers. In its simplest and poorest form the telescope sight is a terrestrial telescope, with two stops added and a pair of cross-hairs set in the tube. The image is formed by the object glass as in the ordinary telescope and it is brought to the eye in its magnified form by the eye piece—merely a compound microscope.

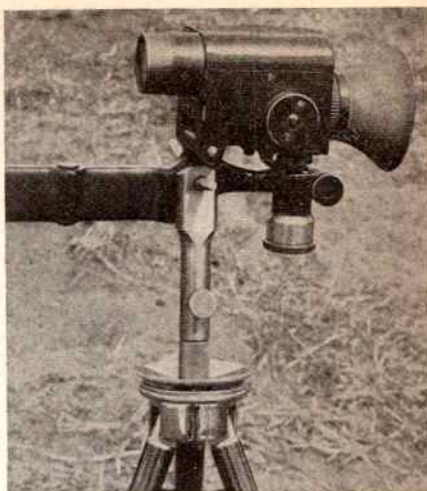
There are usually two stops or diaphragms—pieces of metal with circular holes in them smaller than the lenses before which they are placed. One of these is in the focus of the eye piece to cut out extraneous rays of light and to give the field of the glass a well defined form. The other stop is usually in the focus of the lens nearest the object glass, set where the rays cross and therefore cutting out very little light. With a proper system of achromatic lenses this stop is cut out.

Terrestrial telescopes have what is called "erecting" lenses in the eye piece, this to bring the image to the eye in an erect instead of an inverted position. These lenses, made up usually of other simpler and cheap elements, cut down the field and light in the process, the result being the image we get in using the cheaper form of telescopes, field glasses or telescopic sights.

With a full set of corrected, achromatic lenses used in the telescope, the field is enlarged and the brilliancy is increased, even though the prism be not used. But achromatic lenses cost money and therefore are not used in this country by most of the makers. The result is the poor field and light obtained by most American scope makers.

The prismatic glass is merely a modification of the terrestrial type but uses a pair of prisms set somewhere along the tube for the purpose of inverting the image. The image thus inverted by passing the ray of light through the prisms, is passed to the eye through a simple astronomical eye piece, without the loss of light and field of the ordinary telescope. Almost the same results can be obtained by using large achromatic lenses in the system—as typified by the Goertz "Certa" and the half-dozen standard German-made telescope sights. In the prismatic telescope the prisms may be set in a little box, offset from the top of the tube, like the Hensoldt and the Goertz "Pernox," or the tube may be in the elbow joint shape of the Zeiss, illustrated in this article. In the Hensoldt glass, for example, the ray passes through the object glass then through a 60 degree prism, is bent, sent through a 45 degree prism, is bent again and sent out to the eye piece, being bent four times in progress.

The cross-hair is usually set in the focus of the object lens and may be of any design fancied



The first telescope sight tried by the army, used here as a range finder. The present army telescope is a modification of this.

by the rifleman. The German makers furnish the following variations of the straight spider, cross-hairs with which we are familiar:

A heavy horizontal hair with a dot in the center. A light horizontal hair with a heavy vertical picket running just to the horizontal hair and terminating in a sharp point. The same thing with rounded point. A light horizontal hair with vertical hair coming up just to the horizontal one. A heavy horizontal hair with light hair for its center part and a dot set on the light hair. The same thing with light vertical hair crossing the dot. Four heavy half-hairs, running vertically and horizontally but leaving a small circle in the center in which the object to be hit may be drawn. This is the form mentioned by Captain Casey in his suggestions to the Government ament the new scope. Still another form of hair consists of three heavy half-hairs, one of them vertical and two horizontal, leaving the hole in the center of the ones just referred to, but having also two diagonal light hairs coming to a center in the opening of the heavy ones. Probably the best form of all is the light horizontal hair with heavy picket hair coming to a point just above the horizontal hair. Few of these forms of cross-hairs continue higher than the horizontal hair, leaving the field clear and not obstructing the view of the game sighted upon.

To obtain elevation these hairs are set in a movable frame in the tube and the frame slides up and down in its slot under the impulse of a graduated milled screw-head on top of the tube. None of the German telescopes for hunting rifles have movable tubes like the American devices for obtaining changes of elevation. Some of the German glasses are mounted with no provision for obtaining lateral adjustment. This is a mistake. Others are arranged with a heavy screw with head fitted for a detachable key. Turning this screw moves the entire mount in a dovetailed slot, a strong form of construction and one not offering much chance for loss of adjustment. None of these glasses are mounted with the shaky springs and sliding mountings affected by American makers.

[TO BE CONCLUDED]

See Page 268



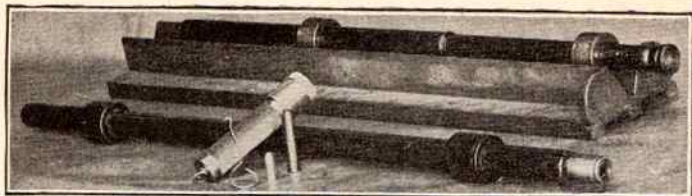


FIGURE 19—A SCOPE ON THE REST

## TESTING MUZZLE BLAST

**M**R. F. W. MANN'S wonderful book, "The Bullets' Flight from Powder to Target," upsets a good many popular theories and one is the commonly accepted one concerning the effect of disturbing the muzzle blast. Dr. Mann introduces the chapter with some interesting remarks relative to the personal element versus mechanical rifle shooting. He says:

In writing an exclusive personal experience it is not easy to entirely eliminate the egoism of it; but the writer hopes under this heading, to dispose of it to a large extent, and begs the reader's forbearance while doing so.

During all the years of my rifle experimenting, one to five shots was often a day's work; ten to fifteen was the usual number; rarely as high as thirty were made. It was my habit to lay out the experiment and prepare the ammunition before the day's shooting, sometimes requiring months. Before making a test group everything is made ready on the range, quiet days selected, flags set, etc. All original groups were carefully filed away and accurate copies of such will be seen here illustrated in part and tabulated in full.

I have no system to uphold or defend, my search being simply and solely after mechanical accuracy in rifle and ammunition, and thus far no system has been found too laborious to test that held out any promise of producing results or accurate groups; thus all the work might be termed mechanical rifle shooting, personal element being absolutely eliminated as far as possible. My whole work has been alone and carried out on my own initiative, regardless of systems or competition with others; it being an axiom with me that when competition enters scientific investigation exists.

During the two years' work at the Milford range, where competition ran high with the other members of the club, it had no influence upon me; my own shooting butt of 100 yards they had no use for. Under these methods it was soon discovered how difficult it is to find what one wants to know.

It is easy to sit about the fireside or under the shade of the home trees, after a day's work at competitive rifle practice, and talk over the causes

of bad shots, and its good fellowship's pleasures are not to be denied; but it is not so easy to prove by repeated and maybe, costly experiments that our fine theories are correct.

After 1899 another range was built on the home-stead farm, sixteen miles from Milford, for during that year the Milford rifle club was given up, disbanded, and the fine shooting house was presented to a blacksmith for a shop.

It was about this time I wrote Mr. E. A. Leopold, Norristown, Pa., and his first letter showed that he was no ordinary rifle student; correspondence with other riflemen amounted to very little because they seemed to follow entirely different lines of investigation, or none at all. Mr. Leopold was original in thought and methods of investigating in many respects, and our correspondence became quite voluminous. Looking over his letters recently, I was surprised to find there were 286, extending over about six years, which contained questions and problems relating to rifle experimenting which were worth preservation.

If the personal factor in rifle shooting can be wholly eliminated, as has been conscientiously attempted in these experiments and tests, the opportunity would then seem wide open for discovering defects in the rifle and its ammunition, or the cause of the x-error, the constant and varying deflections of the bullet from a bull's eye. If mechanical accuracy can be attained, the personal element required will be that of pure skill in handling the arm. If the obstructions to the accurate flight of a bullet are such that they cannot be scientifically overcome, are they not worth discovering, so the rifleman may approximate a distinction between these and his own skill?

If this aspect of the rifle shooting question is clear to the reader, I am confident that the years spent in the effort and the multiplicity of tests and experiments made, to discover the cause of the x-error, and what the rifle can mechanically be made to do, will be useful.

Target shooting and shooting from a fixed rest such as I have used in all these experiments are so different from each other that a word regarding the meaning of the term "mechanical rifle shooting" by way of explanation, is offered.



Target shooting by sighting with rifle held in the hands, butt against shoulder, or with rifle held on a rest, is universally a method the whole object of which is to hit a given point or target. This is rifle shooting in which the personal element enters to a great extent. Mechanical rifle shooting eliminates at once the personal factor as far as possible, for the rifle barrel rests upon a fixed base.

But the main distinction, which should be clearly understood, lies in the fact that in this mechanical shooting no attempt is made to hit anything like a mark, the object being to have the shots print on the paper wherever natural laws throw them, and to have the line of fire remain the same from shot to shot. With few exceptions all experiments here recorded are those of strictly "mechanical rifle shooting" as understood by the definition the writer has endeavored to make clear.

No doubt these compiled tests will interest those mechanically inclined more than competitive rifle shooters, where a large number of shots are required without cleaning; but the latter class are reminded that if mechanical accuracy can be obtained, competitive shooting will quickly follow in its wake.

Test 34a.—This barrel, a Ross-Pope, second-hand barrel, .32 caliber No. 4, octagon, seemed to be doing such good work it was subjected to several tests in an attempt to discover the power or influence of the muzzle blast upon flying bullets. An oak plank six inches wide was placed directly under the course of bullet at the muzzle lying against bottom of the barrel as it lay in the machine rest, thus causing the bullet and muzzle blast to pass for six inches only half an inch from upper surface of plank; upon discharging, the bullet printed in its normal group; plank exerted no influence.

The plank was then raised and placed so the bullet and blast passed only one-fourth inch above it; again discharging, bullet printed in its normal place on the target. Several times the plank was thus raised until bullet flew across as near its surface as possible without touching, and prints still kept their normal position.

A trough was built six inches long, its two sides at right angles, and placed tightly against the muzzle, causing bullet to pass through only  $\frac{1}{8}$  inch from the two surfaces, and still it printed a normal group at target, notwithstanding the fact that the heavy muzzle blast was closely confined for six inches by two adjacent sides which, one would suppose, should blow the bullet widely out of line. No matter how the plank was arranged at the muzzle, the blast seemed powerless to deflect the bullet, and, in fact, the best groups were made when shooting along the angled bottom of this trough.

This indicates that general conclusions obtained among riflemen, "that the muzzle of rifle should be kept away from near obstructions when shooting," are erroneous, and that no error can come by having muzzle, when aiming, close to plank of the shooting table.

Test 35.—On November 8, 1900, with the same rifle which shoots smaller groups when its muzzle was penned in by two adjacent sides, W. E. Mann was interested to make further tests on the same line; so a square box was fitted and driven on over the muzzle end, thus retaining to a certain extent the blast on all sides. Then mandrels were carefully made and Babbitt metal poured over them and the barrel's muzzle; withdrawing the mandrel, a bell-shaped muzzle was formed, four and a half inches long, from which all surplus metal was removed to make this bell muzzle as light as possible. The bullet, flying through this muzzle, surrounded by the blast, printed four inches higher, at 100 yards, than

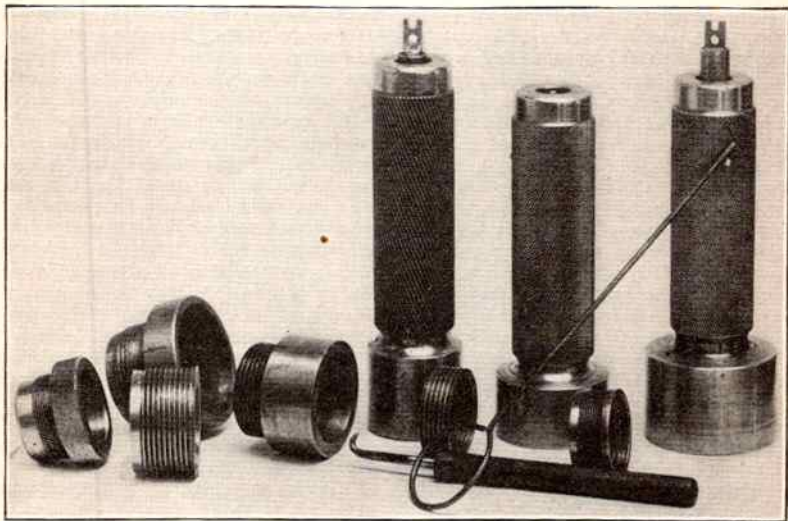


FIGURE 20—THE CONCENTRIC ACTIONS ON THE RIGHT, WITH HOOK FOR DRAWING BOLT AND WIRE WHICH ACTS AS A TRIGGER



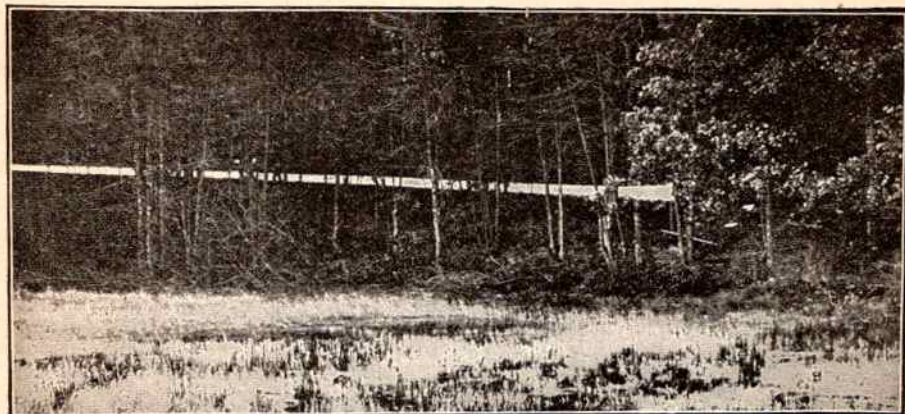


FIGURE 21—THE RANGE WITH ITS MUSLIN COVER

when shot without this extra two and one-half pounds added weight; otherwise it made normal groups. This higher elevation was simply due to less buckle in the rifle and not to any influence of the muzzle blast as disclosed by tests immediately following.

This barrel, without metal end added, at muzzle and shoulder rest, front brace two inches from muzzle, made a group four one-half inches higher than when brace was placed twenty inches from it.

During September 2, 1901, with the same rifle at muzzle and shoulder rest, it printed four inches higher with front brace at extreme end of barrel than when placed ten inches back. The groups, using bell muzzle of November 8, with front rest at extreme end, were 3.75 inches; with bell muzzle removed and front rest at extreme end, the group size was 2.25 inches, both printing in same place.

A 10-shot group was then made with bell muzzle and front rest ten inches from it; size of group was 3.75 inches. Again removing bell muzzle, leaving front rest in same position and group size was 2.75 inches, printing four inches lower than the bell-muzzle group. Driving on the bell muzzle again, one shot was made which printed in center of group which had just printed four inches above normal, line of fire being kept always the same.

There is no reason for believing that the muzzle blast had anything to do towards making the group an inch larger, nor are there reasons for supposing that the Babbitt metal casting was rigid with the barrel, so movement between them may have caused the groups to grow an inch. This bell-shaped muzzle test was not of much value because the two one-half pounds attached to the muzzle brought in other errors, the influence of which could not be fully ascertained.

Such tests as these and many others, which we were constantly devising, were not valueless. They caused our minds to dwell upon the bullet's flight. They entertained us and held our minds in a studying mood. We had not discovered for what we were searching and had no idea of the form of the things after which we were looking. We prided ourselves that we were not over

particular as to what form an experiment should take, provided its results were novel. Our desire was to keep our minds constantly alert by surprising experiments.

Fig. 19 illustrates the manner in which the rest retains telescope or rifle barrel, showing the scope inclosed by its concentric rings lying within it, and by its side lies the rifle barrel, also fitted to its concentric rings, ready to replace the scope in rest; tilted against the barrel is a concentric action which is screwed to chamber end of barrel for firing.

This is not an adjustable machine rest, but having line of fire and line of sight identical and uniform from month to month, always ready for immediate use, is a marked advantage. In short, the good qualities of this V-rest and concentric actions when mechanical rifle shooting is to be performed are self-evident. It takes the buckle all out of the barrel, for the heavier the charge the higher it prints, very different from the normal muzzle and shoulder rest. The rotation test from this rest indicates whether dealing with a well-straightened bore or otherwise.

Not to individualize the many other machine rests that have been devised and utilized to more or less extent, it is claimed for this that by removing the action and stock from rifle and substituting a concentric action, a long step has been taken towards a successful construction of a strictly mechanical rest.

As an illustration of action of the rifle barrel in the rest, which will be appreciated, may be mentioned the fact that a four-inch steel spirit level balanced across the top flat of a .32-40 barrel, when ready for discharge, is not disturbed or jarred when the barrel is discharged, recoils to the block, and rebounds again. The level rides on the top flat as if nothing had happened.

A description of this V-rest would not be complete without the following caution: The line of fire is supposed to be the continuation of a straight line drawn through center of bore of the arm to be tested. This definition is simple enough if bore of the rifle is straight from end to end. Rotation tests with this V-rest, however, indicate



that the bore of a rifle is seldom straight, often far from it; the line of fire from an ordinary arm, therefore, is not easy of definition. In a curved barrel this line might be a straight one drawn through the center of that part of the bore which imparts the final direction to projectile before leaving the barrel, therefore it is not certain that line of V and line of fire lie always in the same direction; and this fact has been a serious handicap all through different experiments attempted at this range.

The concentric actions so intimately associated with Shooting Gibraltar and its V-rest are too important to drop without further notice and illustration. Fig. 20 shows three concentric actions on the right, with hook for drawing bolt and wire which acts as a trigger. This wire trigger acts in open slot, shown at top of two actions,

which are represented cocked ready for firing; giving the bolt a slight turn, but before it reaches the primer, the trigger is separated from it. This whole action is unscrewed from barrel to insert charge, and no appreciable time is lost in the operation. Several bushings are also seen in this cut, which adapt the actions to the threads of various makes of barrels. These actions have been used five or more years without breakage or accident.

This description of our ideal regarding a range which did accommodate itself to solving the questions self-proposed cannot be better closed than by the presentation of a photographic illustration (Fig. 21,) showing its location and appearance, with its muslin cover, as seen from north side of head of the mill-pond which lay between it and the homestead farmhouse.

## THE NEW SAVAGE RIFLE

At no time since the manufacture of the first .22 caliber rim-fire cartridge in America has there been such wide-spread interest manifested in .22 caliber arms as at the present time. The National Rifle Association in fostering international matches with the tiny bore, is doing a real missionary work. The N. R. A. Interclub League and the N. R. A. Intercollegiate League have also done much to popularize the sport, while such hotly contested tournaments as that of the Indoor .22 Caliber Rifle League of the U. S. and the annual round-up at Zettlers famous gallery shows a genuine awakening, while the names of the noted marksmen who participated in the shooting proves the movement to be, not a temporary boom but a healthy natural growth. There are various other reasons for the growing popularity of .22 caliber rifle shooting in America, but perhaps the principal one is the number and variety of excellent small caliber arms supplied by our enterprising manufacturers at such ridiculously low prices as to place them within the reach of every one possessed of the shooting instinct. It is but a few years since our markets were flooded with cheap foreign rifles, crude in workmanship, with the most primitive system of breech closure, without a single claim to grace of form or beauty of finish and most of them actually unsafe to use. Owing to the genius of our native inventors and enterprise of our armors the situation has been completely changed. Instead of having only an antiquated single shot, tip up with cast metal frame, and a foreign made loosely breeched, grease spitting, squirt-gun to select from we have at least half a dozen of the world's greatest armors, each with several different models of the .22 of distinctively American invention and make to supply our needs. We still have much to accomplish in the way of perfecting and standardizing our ammunition, and improving our arms to conform to new ideas and changing conditions, but

the improvement must originate with ourselves as even the English who are our closest competitors with the rifle, admit the superiority of our miniature arms and ammunition.

Among the progressive American armors who are doing so much to popularize the sport of rifle shooting is the Savage Arms Company of Utica, New York. Since the first model of the Savage rifle was placed in the hands of discriminating sportsmen in 1899 there has been a general up-lift in the quality of all America rifled arms. The standards established and maintained by the Savage Company for the material, workmanship and finish of their arms are distinctively their own and while they might be duplicated they cannot be surpassed. The mechanical principle of the Savage arms has not only been proved to be correct by every known test for strength, durability and safety, but in compactness of bulk and symmetry of design it lends itself admirably to the full graceful curving lines of exceptional beauty which distinguish the Savage arms in every grade. While inspecting the various models, even a casual observer could not fail to be impressed with the exquisite proportions, perfect balance and staunch rigid feeling which is characteristic only of high grade arms. These are only some of the good features which invest the Savage weapons with an individuality all their own. Ever ready to meet the demand for the latest and best in firearms and to anticipate the wants of the shooting fraternity the Savage people have recently placed a new .22 caliber repeating rifle on the market to be known as the Model 1909. This dainty little arm was not designed especially for any particular purpose, but was specially designed for every purpose to which a rifle of its caliber could properly be applied. It embodies all the good points of the Savage Model 1903 which has proved to be a great favorite with lovers of the small bore rifle.



## The Outer's Book

The Model 1909 has a twenty-inch round barrel beautifully tapered from receiver to muzzle and finely rifled with an eighteen-inch twist. It will shoot the .22 short, .22 long and .22 long rifle cartridges in one barrel without change of mechanism. The new arm measures thirty-six inches over all, has a shapely shot gun stock, thirteen inches long, with straight grip a drop of two and seven-eighths inches at the heel and one and three-fourths inches at the comb; with the specifications here noted the superiority of the Model 1909 for fancy shooting, practise at flying objects and all lines of shooting requiring speed of manipulation and accuracy of fire will be at once apparent. A feature of the new arm and

solid block of milled steel, one and one-half inches long and half an inch square is wedged between the chamber and a deep shoulder cut in the solid top of the receiver; the shoulder and seat for the breech bolt are cut at a slight upward angle so that increased pressure from the chamber only serves to lock the mechanism more securely and breech up the arm more closely. Owing to the position of the breech block, the size and compactness of the working parts which fill the receiver, and the entire absence of unnecessary openings, there is absolutely no possibility of fragments of ruptured shell cases, burnt powder or hot melted lubricant blowing back into the shooter's face. Cartridges of three lengths varying greatly in



THE NEW SAVAGE RIFLE

one that is insisted upon by up-to-date marksmen, is its convenient take down system; it is absurdly simple, requiring no tools, permitting the barrel to be wiped from the breech and leaving every part of the mechanism easily accessible for cleaning. There are no loose parts to drop out and get lost and the weapon may be packed in an ordinary suit case two feet long. The mechanism is the acme of simplicity, consisting of but three principal parts including the hammer, all of which are inclosed within the receiver, leaving smooth symmetrical outlines and a long level sighting plane unmarred by unsightly projections and unbroken by differences in the height where barrel and receiver join. Every

range and killing power may be placed in the same magazine and fired in rotation or extra magazines carrying but one particular kind may be substituted if desired. Empty shells are ejected from the right side; there are no other openings in the receiver and the ejector port is closed securely except while throwing out the empty shell. The system of action adopted by the Savage Company for their .22 caliber repeaters is the famous Trombone or sliding fore-end action which like some other features of American gun architecture is "A survival of the fittest." Whatever differences of opinion we may have in regard to the proper action for a military or hunting arm of heavier caliber there can be no dispute as to



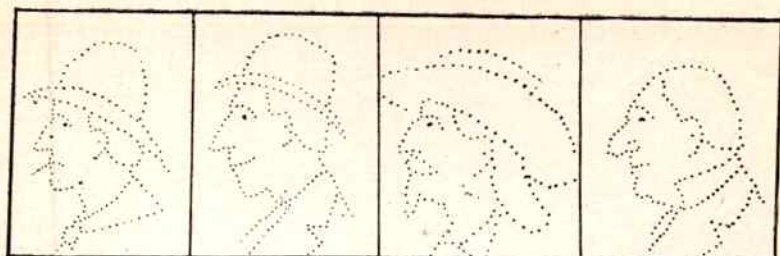
THE SIMPLE TAKE-DOWN SYSTEM

model of the Savage .22 caliber repeating arms is provided with an automatic safety conveniently located on the upper tang like a high grade shot gun, where it is at all times absolutely under control of the shooter. The Savage Company is the only one to adopt the box type of magazine for its .22 caliber arms; there are many advantages in this method of loading. Extra magazines may be filled and carried in ones pocket, available to the hunter in an emergency, or to the snap shot while striving for a speed record. A glance at the mechanical principle of these arms will convince anyone that safety to the shooter was the dominant thought in the inventor's mind. When the action is closed, the bolt which is a

the superiority of the trombone action on the .22 caliber. It has received the unqualified endorsement of all the best rifle makers and users. The model 1909 weighs four pounds ten ounces, is identical in quality of material and workmanship with the Model 1903 although it sells for less.

The Savage Company have recently issued a new catalogue of their arms showing the different models in various styles of stocking and decoration. It is surely a work of art which every gun lover should secure as it will give you new ideas on the possibilities of combining beauty with utility in gun building.





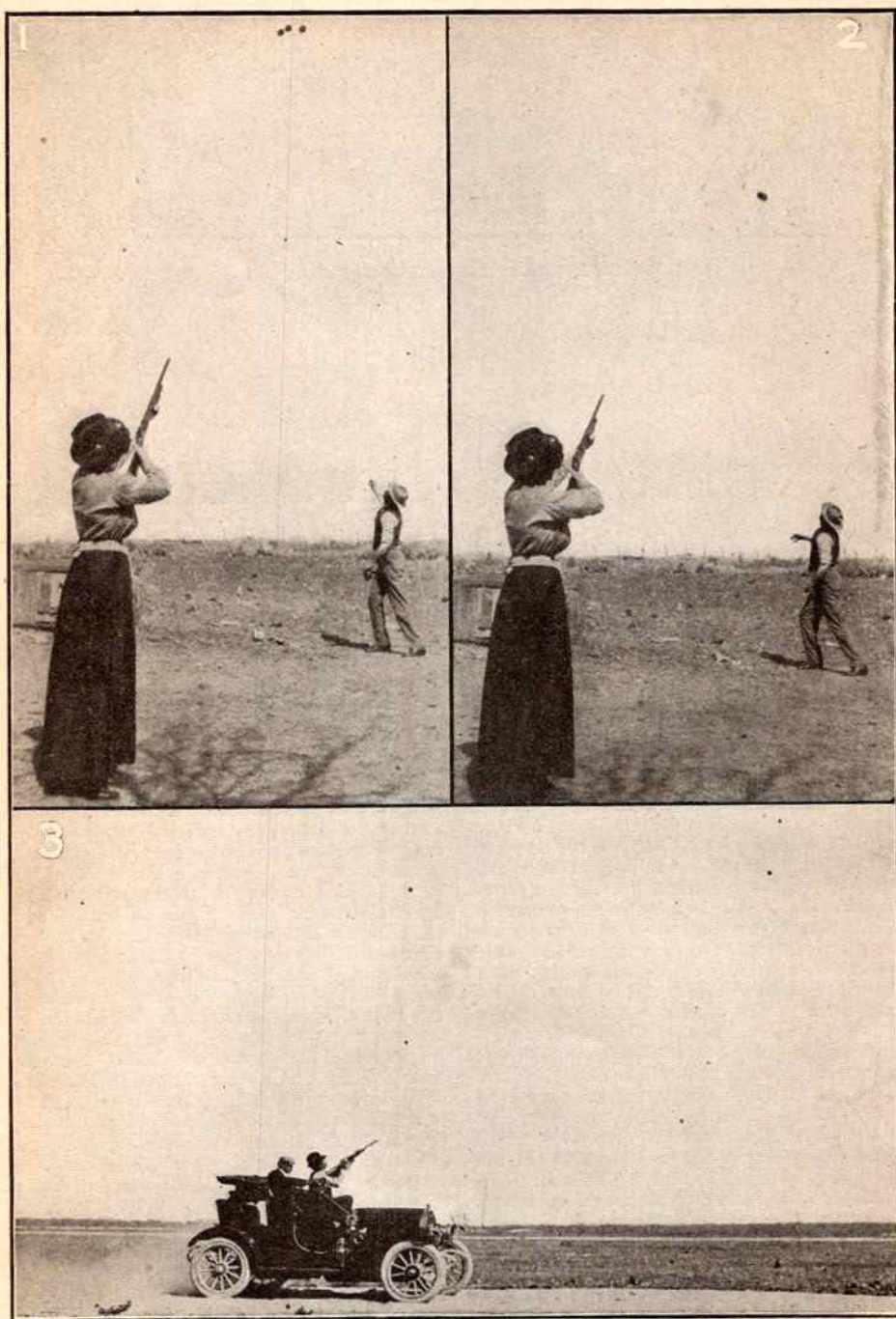
SOME TOPPERWEIN BULLET ART WORK

## TWENTIETH CENTURY MARKSMANSHIP

FROM the earliest ages when primitive man was compelled to depend on his patiently acquired skill with the crude weapons of his time to provide food for his frowsy family and less skillful dependents, certain individuals, who excelled in the use of weapons of war or the chase were, by virtue of their prowess, accorded a high place in every community. Not unfrequently there were those who, from natural endowment, superior intelligence or persistent effort, so far excelled their fellows in their ability to feed or defend the community, that their fame soon spread far beyond local boundries, exciting the envy and jealousy, or challenging the admiration of rival champions. To excell in anything that makes for the benefit of the common-wealth means the praise and plaudits of our less talented fellow men, but when this superiority is self-acquired and takes the form of physical, intellectual or technical excellence, there are few indeed so small and narrow as to deny the deserving their measure of admiration. It is this desire to win the good opinion of our fellow man, and the inborn love of approbation and pride of accomplishment that ever urges us to renewed effort. The world does not soon forget those of its heroes whose fame rests on personal skill and ability to do things. The sling of the shepherd boy will still be remembered when victories of many a military genius will have been long forgotten. A good marksman has always been honored among his fellows, for the reason that to become one implies a certain element of leadership, just as it did in the stone age. We naturally associate superb health, faultless vision, nerves of steel, good judgment, and capacity for leadership with marksmanship. Every one admires these qualities in men, and to this cause we may justly attribute, in a large degree, the universal admiration with which a good shot is regarded. Few of us could name in order the kings of England,

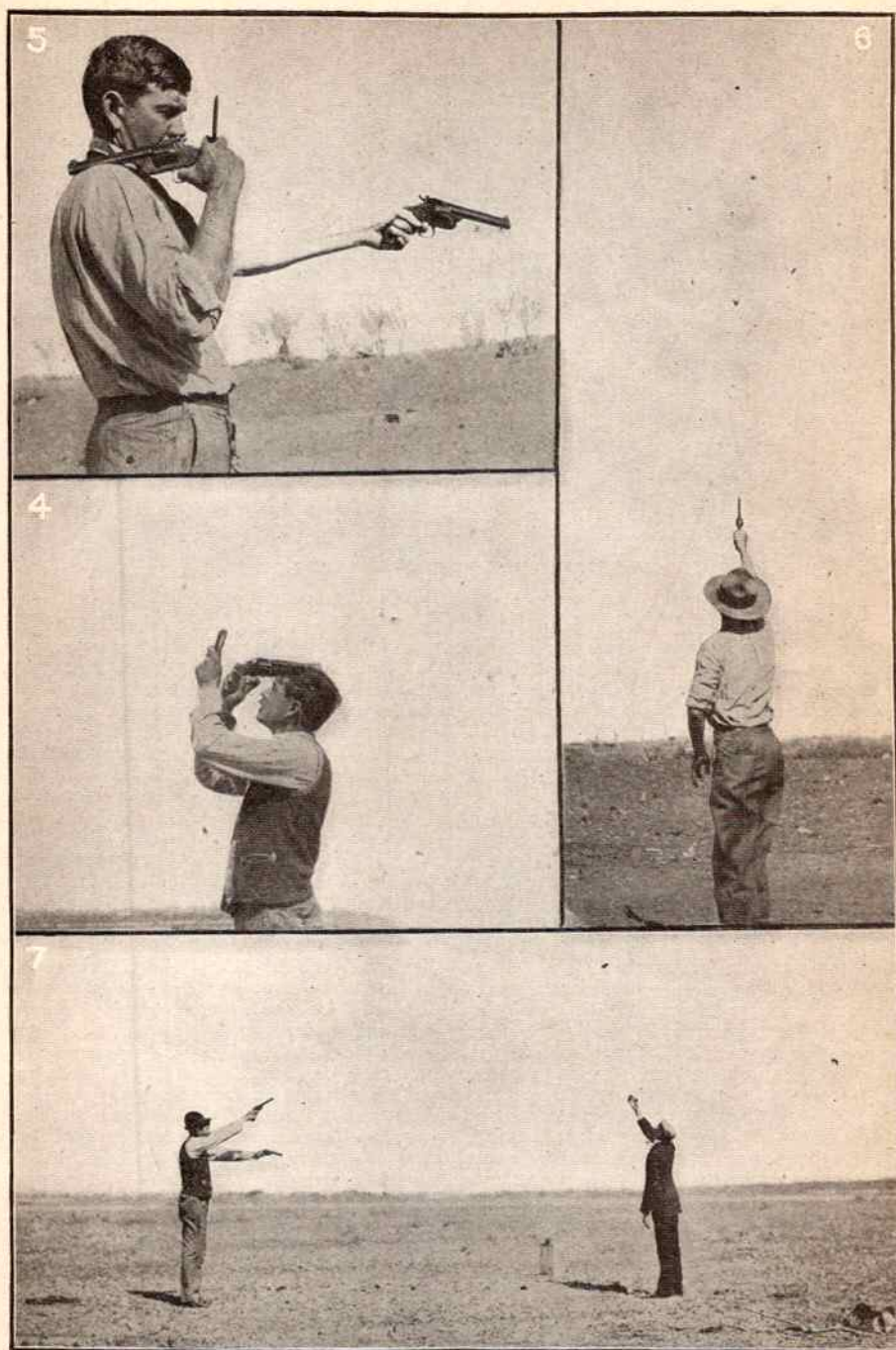
but most of us could describe with minute detail the feats of marksmanship performed by Robin Hood and his "Merrie Men." We may be a trifle foggy on the early history of New York but we have a clear mental picture of Natty Bumppo dropping two wild pigeons out of the air as they crossed in their flight, with a single bullet from his long barreled rifle. Ask a school boy what he knows of the history of Kentucky and it is the famous scout and rifleman, Daniel Boone, who is at once the central figure of his thoughts. Of the many brave and efficient officers and professional fighting men who figured in the western Indian wars but few names are remembered, while the famous shots and scouts like Carson, Cody and Hickok, are still spoken of with admiration and regarded with a sentiment akin to hero worship. All the world loves a good shot, and it is this inherited love of the art of shooting and the lingering romance of former days, when the rifle and pistol were essential to personal safety, that makes us forego the allurements of a hundred other attractions and flock to witness the feats of marksmanship of our present day experts. Snap shooting with rifle and pistol at flying objects is an art original with American marksmen, and one in which they are still supreme. American frontier history is richly embellished with the names of men who, in their time, were great marksmen, but it was not until the opening up of the great West, with its limitless game fields and incidental but perpetual Indian warfare, that we began to hear of the wizzard-like performances of such masters of a man's weapons as Wild Bill, Dr. Carver, Col. Cody, Major Powell (White Beaver), and hundreds of others perhaps less famous but scarcely less expert in the handling of fire arms. It was to a great extent, the conditions under which these men lived that made them good marksmen, but it was the invention of the Winchester repeating





Nos. 1 and 2—Mrs. Topperwein breaking five blue rocks in the air. No. 3—Mr. Topperwein breaking small pieces of coal with a rifle from an auto going twenty miles an hour.





No. 4—A backward mirror shot with a .44 revolver. No. 5—Breaking two objects at once, one in front, one behind. No. 6—Making a double with revolver. No. 7—Breaking a flying and a stationary object at the same time.





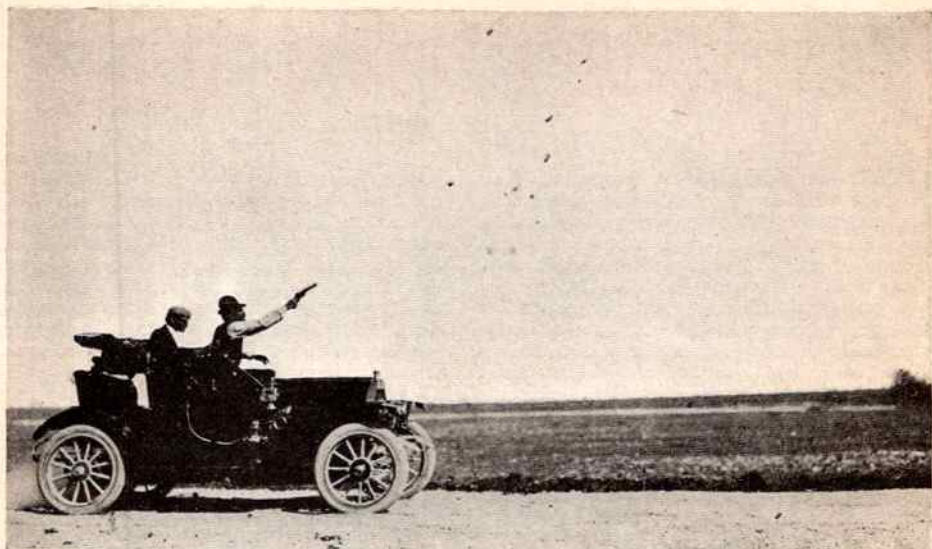
NO. 8—SHOOTING TWO REVOLVERS AT THE SAME TIME

rifle and the Colt's six shooter, both distinctively American weapons, that made their names synonymous with speed and precision in the handling of fire arms, for all time. So wonderful was the work of our Western plainsmen with rifle and six shooter that there are many belonging to the more conservative and conventional class of shooters, who have repeatedly challenged the veracity of history, or the ability of any modern expert to duplicate their feats of marksmanship and manipulation. However, notwithstanding the fact that the strenuous conditions which developed our earlier generation of shooting stars, have passed forever, we still have modest, unassuming shooting enthusiasts who can duplicate and surpass the most difficult stunts of our former champions. There are those still among us who have seen some of the crack shots of the frontier of later days shoot when at their best, we have also seen some of the best shots of today with their up-to-date methods and are therefore well qualified to pass judgment as to their respective merits as marksmen. We should, in fairness, remember that automatic and self-loading arms of light caliber, and smokeless ammunition, have made the more spectacular features of snap shooting possible. But the writer believes that even with the old lever action .44 Winchester rifle and the single action six shooter, most of our shooting men of today would be more than a match for the celebrities of the western frontier. Not alone our snap shots, but our long range and military rifle men could give the truly great shots among the buffalo hunters a run for the trophy. Undoubtedly, the two Topperweins are the greatest living exponents of snap shooting. With rifle, revolver and shot gun, they duplicate every difficult feat of marksmanship practiced by the past masters and have invented a number of their own, never before heard of or attempted by any one, however skillful. Some weeks ago a correspondent

who is interested in fancy shooting, requested us to publish a few cuts showing some of the positions assumed and a description of what is possible for a good shot to accomplish. Through the courtesy and generosity of Mr. Topperwein and his gifted and winsome wee wife and shooting partner, we are able to publish a series of photographs showing several of the most difficult and complicated shots ever attempted with rifle and pistol.

Cuts Nos. 1 and 2 show Mrs. Topperwein breaking five blue rock targets thrown in the air simultaneously. No. 1 shows result of the second shot. No. 2, as taken, shows the result of four shots and Mrs. Topperwein about to fire the fifth. In all her work with the shot gun Mrs. Topperwein uses a Winchester Repeating shot gun with which arm her speed of manipulation with accuracy of aim rivals the best work that has yet been done with a self-functioned arm. No. 3 shows Mr. Topperwein breaking small pieces of coal from an automobile going at the speed of twenty miles an hour. The coal is thrown by the shooter himself. The gun used for this stunt is a Model 1892 Winchester rifle taking the regular factory loaded .32-20 rifle cartridge carrying a solid bullet weighing 115 grains. Cut No. 4 shows a backward mirror shot with a .44 caliber Smith & Wesson revolver. In all Mr. Topperwein's revolver work he uses .44 Russian Model single action revolvers and solid ball cartridges. Cut No. 5 shows how to break two objects at once. Cut No. 6, making a double on two small pieces of brick using one single action Smith & Wesson six shooter. Cut No. 7, breaking two objects at the same instant, one stationary and one flying, using Gallery revolver ammunition with single solid bullet. Cut No. 8, shooting two revolvers at the same time, breaking two objects placed twenty feet apart and to the rear of the shooter. Cut No. 9 shows Mr. Topperwein in





NO. 9—BREAKING PIECES OF COAL WITH A REVOLVER, FROM AN AUTO GOING TWENTY MILES AN HOUR

one of the most difficult and spectacular feats of marksmanship that has ever been mastered by any shot in any country. Seated in an automobile driven at a twenty-five mile clip he tosses small pieces of coal into the air and powders them with solid bullets fired from a revolver. Skill with fire arms could scarcely go further than this.

A most attractive feature of Mr. Topperwein's exhibition and one that is viewed by the spectators with wonder and amazement is his figure shooting. Taking a sheet of tin or a piece of clean card board without pencil mark or other outline for a guide. With the bullets from a .22 caliber Winchester automatic as his stylus, he engraves with incredible speed and machine-like precision the profile of an Indian chief with featherscrested war-bonnet, and Uncle Sam with plug hat and goatee or any other grotesque or popular character that may be called for by his admiring audience. Shooting from the automobile with a rifle at flying objects is not an entirely new feature of Mr. Topperwein's exhibition, but we are publishing the first successful photograph taken of the stunt. Probably the niftiest little piece of shooting ever undertaken to amuse the public is hitting small objects in the air from a swiftly moving auto with a revolver and ball cartridge. Mr. Topperwein has been very successful with all the new features added to his repertoire, frequently repeating the most difficult to prove that there is no element of chance or luck in his work.

The performance shown in the photographs are but a few of the truly marvelous things

shown by the Topperweins in their long and varied repertoire. One of the tests of speed and aim in which the honors rest with Mrs. Topperwein and in which a single miss might have proved disastrous to a dainty costume, is when her athletic husband from a distance of about forty yards throws a dozen eggs directly at her in rapid succession all of which are intercepted in mid-air with charge of shot from her Winchester 12 gauge repeater. Matchless as is her work with the smooth bore, her performance with rifled arms is scarcely excelled by that of her talented husband who is conceded to be the Premier in his line. Every American, man and boy, should see the Topperweins shoot. An object lesson is the best method of imparting instruction as it leaves a permanent impression. The fascination of fancy shooting is irresistible, once learned it will never be forgotten and while furnishing a clean manly sport it is an attractive school for the training of young riflemen. It is but a single logical step from the sporting to the military rifle. The Topperweins, while on the road, represent the Winchester Repeating Arms Co., of New Haven, Conn. The shooting tours of the Topperweins is one of the principal reasons for the rapidly increasing popularity of the .22 caliber rifle and its use in America. Every convert to the use of the miniature rifle means a manly and self-reliant boy, a lover of wood-land and river, of mountain and plain, a graduate into national guard or civilian shooting club where eventually must be found the cool-headed ready-made soldier for the emergency that time has never yet and never will fail to bring.



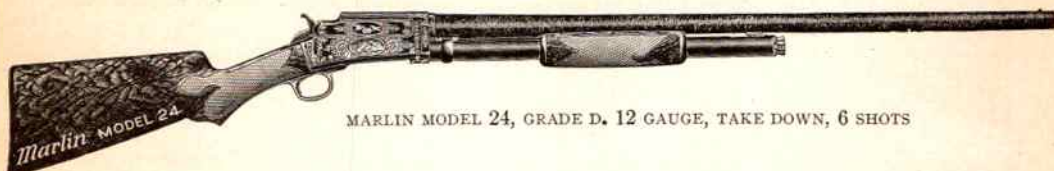


# IS THE DOUBLE GUN DOOMED?

By W. L. COLVILLE ("Dick Swiveller")

I HAVE been writing for the sportsman's press for thirty seven years, and in that period have witnessed the beginning, the growth and the achievements up to this date in American shotgun building. There has been no final improvement, but room always for the exercise of brain-power and ingenuity for further improvements, all tending toward the more perfect shotgun construction in action. Ease of manipulation, lines, fewest parts and the extremely important factor of balance. If the gun is not well proportioned and does not handle lively and comfortably, the arm is cumbersome and unsatisfactory. So intricate and so exacting is the work in shotgun construction,

present gun. Now it is presenting good lines, excellent balance and workmanship; smooth action and the quickest lock action I have ever known—and I have had some experience with locks. The stocking is of high order, shaped in the straight line, cast in or cast out, as ordered, done by a stocker who thoroughly understands his business evidently. A stocker who can do this work of shaping a stock cast in or cast out, as ordered, and preserve the alignment from the eye along the middle of the rib is an artist.—All this is embodied in the improved Ithaca. I used a 12 gauge, 26-inch, 6½-pound Ithaca, the past season. The balance and hang of this particular gun will compare favorably



MARLIN MODEL 24, GRADE D. 12 GAUGE, TAKE DOWN, 6 SHOTS

particularly the hammerless form, and so many are the disappointments and discouragements to attain certain results, that I think if all or part of this were anticipated or known prior to investing money and embarking in factory gun building, the money would be used in other industries.

The Parker people and the Remington Arms Company are the pioneers setting the example to "keep at it," striving for excellence. The Hunter Arms Company, constructing on beautiful lines, all harmonizing with the bar lock plate to assist in this, and their recent addition of one trigger improvement—or, shall we say, the subtraction of one trigger; the Baker gun, showing excellent workmanship and embodying the safety block to the tumblers; the Davis gun, with a lock action that blocks the sears; the Lefever gun fully compensated for wear; Hopkins & Allen, building a good gun for the money; the Fox gun, becoming well known for good workmanship, and the Ithaca

with the average English work. This is saying or admitting a good deal by a man who is a crank on hang and balance. I have always wanted to give the meed of praise to those American gun builders who have made so many improvements in gun construction and give the sportsman a fine gun at a fair price, and a real good gun to the poor man at a very modest price.

If the Ithaca people can produce regularly a gun in their higher grades embodying the lines, hang and balance exemplified in the 12, 26, 6½ mentioned, they have "found the way" to the attention

of sportsmen who are particular and appreciate all that goes into the makeup of a good gun.

It has absorbed almost forty years of time in devotion

to experiment, thought, work and disappointment, on the part of the American gun maker to produce the excellent arms of today and that is quick work when we consider that it has taken over a hundred years of experience to produce the English master pieces. We must bear in mind, too, that American makers have had the benefit of English models, workmanship and ornamentation. Thus the American gun builder has a sixty years margin to round out the period in which the English

PERSPECTIVE  
VIEW OF  
THE MARLIN



STEVENS PUMP NO. 525

gun, so improved in lines, balance, action and workmanship, as to be an entirely different gun from what it was a few years since, are all doing their part. The Ithaca was once a very ordinary arm, poorly balanced, and badly stocked, without real good workmanship, filling a certain demand for a moderate price. Those who remember the Ithaca of eight and ten years ago and beyond, should not confound it with the make up of the



## Gun and Ammunition Department

621

maker has worked. What will he produce then? Well, what is to become of the double gun? The Remington Arms Company will make no more—they have disposed of their entire stock of hammers and hammerless double guns—and will now devote their entire attention to the manufacture of

lock, the double barrel flint lock, the percussion lock, and the modern breech loader? The generation of sportsmen now passing love the 12, 16 and 20 gauge double guns of pleasant weight afield, yet the generations coming, if not being educated to the fine points of the double gun, will use the



STEVENS PUMP GUN NO. 522

the pump and automatic arms. They are far seeing people and do they see the hand writing on the wall that spells the passing of the double gun? There is a generation of old and middle aged men today who used the muzzle loader—and for the past forty years have shot the breech loader. There

pump and automatic afield in ignorance of the joy of carrying a 12, 26, 6 $\frac{1}{4}$ , or 16, 26, 6 $\frac{1}{4}$ , or 20, 26, 6 and be satisfied. Thus in the years to come the pump and automatic may not only drive the double gun from the traps, but the field as well, and in the course of time there will come a genera-



REMINGTON TOURNAMENT GRADE TRAP GUN

is a generation of younger men today who not only never shot a muzzle loader but *never saw one!* "Funny, is it not?" the older shooter will say. This younger generation that never saw a muzzle loader has grown up with the breech loader from twenty years ago—and seldom would he have an

tion of shooters who never saw a double barrel breech loader. All this may come to pass when this generation of sportsmen has "gone beyond" and the next generation has lived half or more of its life.

The attention of gun builders is being turned



REMINGTON TRAP GUN, SHOWING SLEEVE ACTION

opportunity to see a muzzle loader, as they are not on sale and in sight unless it be occasionally in very remote places or held in sweet memory of days of old. There is a generation of shooters today coming on who never shot a double gun; they began shooting, and are beginning to shoot

toward the pump and automatic, and they are conjecturing as to whether the balance of trade will go in favor of the magazine gun. Now, in addition to the Winchester Arms Company, the Marlin and Remington Companies—there is the Stevens Arms Company making the pump gun and a good



REMINGTON AUTO-LOADING SHOT GUN

with the pump and automatic gun. As the years their numbers will increase. The pertinent question now is, will the pump and automatic precede the double gun at the traps and in the field? Is the automatic to be the sur- the fittest, from the matchlock, the wheel

one, for all their work is of a high class. The field is broad for marketing the pump gun and all other kinds. It will be as it always has been, a question of education and selection—and in the end the survival of the fittest. If it is the single barrel, one-shot, or the pump and automatic that finds



public favor, then all forms of double breech loader must go nearer the wall. It will, however, be many years before the double gun becomes obsolete if it ever does completely, particularly for field shooting. The love for the double gun with its light weight, power, lines and balance, is still held

There are exceptions when a woman is very strong and naturally a good shot and can hold up the pump gun satisfactorily. Mrs. A. Topperwein being such an example. Now we may say, guess or figure that there are almost a thousand women shooters in the United States and the number is



A WINCHESTER TOURNAMENT GRADE PUMP GUN

by tens of thousands of sportsmen all over this broad land—and they are teaching their boys how to handle and shoot the double gun. The double gun is the proper gun for women to learn how to shoot with and continue to use and the reason is obvious.

being augmented. They are to be taken care of, taught right, started right, with the proper weight gun. On that point see my article, "Guns for Women and Lessons in How to Shoot," in "American Field," August, 1909.

## THE 9 mm. MAUSER

THE loads developed, and used in high power rifles by big game hunters must always be a subject of deep interest to every member of the shooting fraternity, but more especially to those who are of a scientific bent and delights in experiments. We owe much of our remarkable progress in the development of fire arms, and the perfection of modern ammunition, to that class of professional men who, as a rest from their arduous life work turn to the rifle for recreation. With these men the study of the arm and its possibilities, is a labor of love, uninfluenced by thought of pecuniary profit. Trained as they are to give the closest attention to the most minute detail their work is to be relied on. To this class belongs Mr. H. F. Marston, to whom we are indebted for the following interesting formulas and ballistic performance of the 9 mm. Mauser.

No. 1.—U. M. C. case, No. 9 primer, 46 grains 1908 Du Pont Military Powder, 280-grain U. M. C. bullet; velocity, 2245 foot seconds; trajectory of 200 yard range, 4.63 inches; energy, 3135 foot pounds. Bullet measures .3586 inches.

No. 2.—U. M. C. case, No. 9 primer, 42 grains Lightning No. 1 powder, 250-grain (.35 Winchester) U. M. C. bullet; velocity, 2300 foot seconds; trajectory of 200 yard range, 4.49 inches;

energy, 2937 foot pounds. Bullet measures .3585 inches.

No. 3.—U. M. C. case, No. 9 primer, 48 grains 1908 Du Pont military powder, 250-grain (.35 Winchester) U. M. C. bullet; velocity, 2330 foot seconds; trajectory of 200 yard range, 4.43 inches; energy, 3008 foot pounds. Bullet measures .3585 inches.

No. 4.—U. M. C. case, No. 9 primer, 50 grains 1908 Du Pont powder, 200-grain (.35 Remington-Auto) U. M. C. or Peter's bullet; velocity, 2600 foot seconds; trajectory at 200 yard range, 3.6 inches; energy, 3180 foot pounds. Bullet measures .3588 inches.

Load No. 4 with 30 grains W. A. .30 caliber powder, or 29 grains 1908 Du Pont, makes a splendid target cartridge.

In loading Nos. 2 and 3 the 250-grain bullet is seated in case  $\frac{3}{8}$  inches with slight crimp.

In loading No. 4 the 200 grain bullet is seated in case  $\frac{3}{8}$  inches with slight crimp.

As a factor of safety 'tis well to indent the shells just back of bullet for loads 2, 3 and 4 with the Ideal shell indenter.

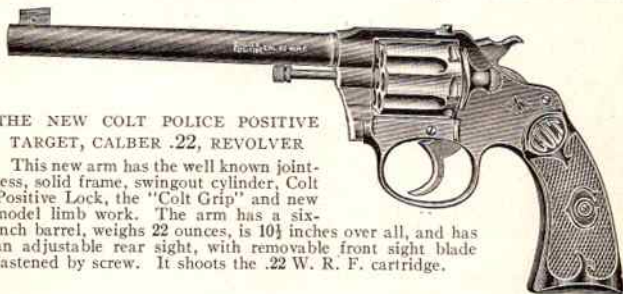
Under no circumstances should Winchester cases be used for above loads. Their capacity is much less than the U. M. C. make, therefore cutting down the air space to a dangerous degree.



## THE GUN CRANK'S GUN

FOR three-quarters of a century the Colt's Patent Firearms Company of Hartford, Connecticut, has supplied the armies of the world and the shooting men of every country with more, practical and reliable firearms in different models, than all other armories combined. Although the products of the Colt armory represent almost everything in the line of firearms, from a rapid fire machine gun to a single shot derringer, it is the revolver that has carried the name of Colt and the fame of American hand arms to the remote corners of the earth. Since the first model of the Colt six shooter was given to Americans in 1835, and up to the present time the Colt Company has responded to, or anticipated, every call of the public for new models, or modifications of caliber made necessary by changing conditions. Once more the enterprising firm has earned the gratitude and patronage of every one who, whether from natural inheritance, latent talent or developed skill, still retains the shooting instinct. For many years there has been a cumulative sentiment among the more progressive and intelligent gun men, in favor of pistols of lighter weight and smaller caliber, for general purposes, than those designed especially for the more serious demands

not likely to prove wholly satisfactory. The demand for a medium sized one-hand gun to take the cheap but almost perfect .22 caliber ammunition of American make, has become universal. It is needed as an auxilliary arm by the military people. The snap shooters, who are rapidly increasing in number and who consume thousands of rounds of cartridges daily, will each want at least a pair of the new arms; every chief of police who is alive to the necessity for making each member of his force as handy with a gun as the armed criminals whom they frequently encounter, will equip his armory with the new practice arms and forever relieve his officers of the drudgery of re-loading cartridges which, to any but the most ardent gun-lover, is apt to become monotonous. Every big game hunter is looking for just such an arm to use as a secondary battery to his high power rifle; it will be found convenient to bag the budding grouse or the soft pedaled cotton tail as he loafs in the protective coloring of the old travois trail; every camper, canoeist, fisherman and woods-loafer will carry one of the new .22 caliber Colts. Being a genuine full-sized gun, it will furnish adequate protection against marauders; lucky shots at wild fowl floating in fancied security on quiet curves



THE NEW COLT POLICE POSITIVE TARGET, CALBER .22, REVOLVER

This new arm has the well known jointless, solid frame, swingout cylinder, Colt Positive Lock, the "Colt Grip" and new model limb work. The arm has a six-inch barrel, weighs 22 ounces, is 10½ inches over all, and has an adjustable rear sight, with removable front sight blade fastened by screw. It shoots the .22 W. R. F. cartridge.

of man on frontier service, but bearing a close relationship to the latter in general outline and mechanism, so that the skill in marksmanship and manipulation acquired in practice with the smaller arm would be available when circumstances compelled recourse to the service weapon. The almost prohibitive cost of ammunition, since the introduction of smokeless powder and metal patched bullets, renders it imperative that something be done to reduce the expense of shooting with any kind of arm, if we would still hope to shoot regularly for the pleasure it affords, or sufficient to become even good average shots. The ordnance officers of the U. S. Army, recognizing the necessity for economy in this direction, have for some time been experimenting with revolvers of .22 caliber in less expensive makes, with a view to selection of a pistol adapted to the training of troops in the practical and American methods of using a pistol, at the minimum of expense. No report of their work has yet been made public, but it would be safe to hazard a guess that with ammunition as cheap as the regular .22 caliber cartridges are, unless the arms used are made of inferior material, and fitted with the utmost care by experienced workmen, their performance is

of woodland lake and river will add quality and quantity, always welcome to camp fare; while a single bullet properly placed will put a quietus on the big muskелunge struggling at the end of forty feet of treacherous line. The blase autoist will experience a new thrill as he bowls along the less frequented highways, taking hazard shots right and left at the suddenly startled small game or the useless "varmints" which always offers such tempting targets. There is no more enjoyable sport than shooting from a rapidly moving vehicle, and no more practical school for one-hand gun could be devised, offering, as it does, ever varying ranges, angles and directions, and an infinite variety of targets. One of the many pleasant surprises attending this method of pistol practice is the satisfying degree of skill which any one possessing an atom of gun sense may soon acquire. The new gun is now on the market under the title of the Colt Police Positive Target, Caliber .22. The manufacturers' foreword reads in part as follows:

The Colt Company's experts have spent many months in testing this arm and it was not until they were convinced of its *practicability* and *accu-*



racy that the manufacturers decided to place it before the shooting public."

"It has the well known Colt solid frame, forged from a block of solid steel, the positive lock that prevents accidental discharge, the well known Colt grip, a six-inch barrel fitted with adjustable rear sight, and front sight blade that is removable. Its length over all is 10½ inches, and weight 22 ounces. The cartridge found best adapted to this model is the well known clean and powerful .22 W. R. F." The cartridge selected is the largest .22 caliber rim fire made; it contains 7 grains of black powder and a flat nosed, lubricated bullet weighing 45 grains; it is also to be had with smokeless powder and greaseless bullet. When fired from a Model 1890 Winchester rifle, the cartridge has a velocity of 1137 foot seconds and an energy of 121 foot pounds and a penetration of seven ¾-inch pine boards. The new gun will cover a field in the domain of sport that, for want of a fitting arm, has hitherto been overlooked. What the miniature rifle is doing to awaken a love for the art of scientific rifle shooting, the .22 caliber revolver will do in its own, not less important, department of usefulness. The thing of prime

and reliability are at once eliminated from criticism, and may be placed on the credit side. The selection of the .22 W. R. F. cartridges is no doubt a wise one, as fire arms of the revolver type require a slight surplus of energy in the cartridge to compensate for possible waste. Were it not for this single defect, the mechanical principle, the exquisite proportions. The balance and beauty of the revolver makes it par excellence the light caliber weapon. I am of the opinion that with the possibilities of smokeless powders in the direction of concentration, vast improvement in the whole list of .22 caliber ammunition will ultimately be made. A slight increase in the thickness of the copper shell of the regular .22 cartridges would prevent bulging back at the base and jamming between the rear of the cylinder and the recoil base, when used in a revolver. There are many other improvements that might be suggested, and each would add to the value of the revolver and other types of the one-hand gun as general purpose arms.

The element of economy in shooting the new .22 will be its strongest argument for popularity with the average shooter. The fact that it is a



ramrod case-hardened and beautifully clouded. Indeed it is a remarkable example of gun architecture and bears many features in common with the New Police Positive Target .22 caliber revolver.

This cut shows a Colt revolver made in 1855, at Hartford, Conn.; it is about .28 caliber and is marked "Address Col. Colt, Hartford, C. T., U. S. A. It has a solid frame, side hammer, and the cylinder is actuated by a ratchet attached to the rear of the spindle where the bolt is also located. This system permits a very narrow frame which brings the line of recoil close to the hand, the trigger pull direct to the rear. The well known Colt lines will be readily recognized and their correctness is at once verified when one comes to point the weapon. It is perfectly proportioned, weighs but 16 ounces, has hammer and

importance is to get people to shoot; the lure of the sport and man's inherent love of weapons will do the rest. To a greater extent than any arm that has preceded it, the weapon just issued is the result of a crystalized sentiment and a concerted demand from that interesting and insistent group of "insurgents," self-named and known to the shooting fraternity as "Gun Cranks." It is safe to say that never before has the demand for an arm of any character been so generally and so persistent. In justice to the gun cranks we might add that their plea for the .22 caliber revolver was not prompted by selfish motives, but was made in the interests of the entire shooting public and to meet existing conditions, with which gun manufacturers were not wholly familiar. The logic and intelligence of the promoters, and the loyal and enthusiastic support given by all the sportsman's journals, gave promise to success from the beginning. The new Colt comes to us with the assurance of a royal welcome and the advent of no other arm has ever been so eagerly anticipated. With the name Colt behind it, the qualities of material, strength, durability, workmanship, beauty of outline, finish

man's gun in size and a real weapon in performance will recommend it to those who need a reliable arm, but only shoot occasionally. The advantage of being able to use it in thickly settled communities, when a larger caliber would not be permitted, will make it a favorite with many whose shooting has been limited to an occasional score at some remote rifle range. Military schools throughout the country who are compelled to purchase their own supplies will be quick to note the advantage of cheap shooting. The sportsmen of today are under heavy obligation to that little band of enthusiasts who have labored so long and persistently for the new revolver. Many of the most desirable improvements in firearms of later years were secured through the unselfish and untiring efforts of these men. Fair and impartial, but unsparingly in their criticism the influence of these men has been a power for good in the way of securing concessions from conservative manufacturers and unlimited free advertisement for the more progressive. We hope to be able to give our readers more complete information of the Colt .22 caliber revolver in our next



## THE AUTOMATIC PISTOL'S GRIP

IT is evident to any one not wholly oblivious to the signs of the times that the hand weapon of the future will have a self-functioned mechanism. It is but few years since the first of this type was invented, made abroad and placed on sale by a foreign country. This model, as it first appeared, was unwieldy, uncouth, cumbersome and without a single claim to beauty, balance, or compactness. In form it was in no way suggestive of a firearm, and it resembled nothing so much as a ship caulker's mallet. There are now in existence in various countries of the world, upwards of sixty-five different inventions of varying mechanical principles, all more or less applicable to the construction of self-loading pistols. Although the time that has elapsed since the appearance of the first self-loading pistol has been comparatively short, and the number

It is a well established fact that a constantly changing center of balance in any arm, is not conducive to accuracy, and while a certain proportion of the total weight of a pistol should be forward of the trigger, to give muzzle weight and insure steadiness of holding, the weight center should be constant and unvarying to give uniform elevations at the target. This, with the smallest bulk consistent with a weight proportioned to the caliber, compactness of the mechanical section, and the absence, wherever possible, of all projecting angles and disfiguring lines, makes it imperative that the magazine should be located in the handle. This is one of the first steps in the development of the ideal self-loading pistol, and one that has been recognized and adopted by the more progressive armorers and inventors. Having located the magazine in the handle it is of course but



FIGURE 1—An example of instinctive aiming. The correct position in hip shooting, showing how a gun with a grip set at the proper angle, will fall naturally into the true line of direction.

of inventions has multiplied rapidly, there is already a noticeable gravitation toward a definite type. Certain features of each make are being selected and adopted by the manufacturers of those types which possess sufficient merit to survive. At first it was quite enough to know that the weapon was a rapid firearm, and doubtless many were bought as novelties rather than with the idea of being put to any practical use. The first automatic pistols, despite their numerous faults, showed at once the possibilities of arms of that type and it was evident to the unprejudiced that if the arm could be so modified in size, weight and outline as to more nearly conform to the proportions of the deservedly-popular revolvers, the automatic would be in all the essentials of a handgun, the superior arm. Assuming that a self-loading gun possesses all the requisites of a weapon intended for a certain line of service, viz. ballistic qualities, fire speed, reliability of function, etc., it should also be so constructed that the center of gravity will not shift as the magazine is emptied.

logical to expect that radical changes from former ideals must be accepted. The handle cannot serve as a casing for a portion of the mechanism and a receptacle for a clip holding eight or ten cartridges without undergoing certain modifications of outline; but, still, it would seem that slight concessions might be made to the shooter without encroaching on the space or form of interior demanded by the working parts. The element of beauty is almost as potent as that of utility in placing a firearm in the hands of the public. We may be growing over fastidious in our tastes but as long as beauty also means general improvement it should not be wholly ignored. We should insist on beauty as well as utility, compactness with proper proportions, and balance considered in its relation to the total weight of the arm. Every weapon intended for one hand use should be designed for intuitive shooting. It should be possible to point a pistol as naturally as one's index finger. To enable one to do this the angle at which the handle of a pistol is placed should



be determined with due regard for its relation to the long axis of the bore, when the hand and arm are held in a natural, unconstrained shooting position. Wherever a repeating pistol has been used the Colt grip is known and preferred; it has proved satisfactory to a greater number of genuine shooting men than any other form of handle that has yet been designed; no doubt if it could be applied to the more modern automatic types the handle problem would be solved for all time. The revolver being a hand functioned arm, the Colt grip was singularly helpful, and well adapted to the methods of manipulation which emergencies requiring the utmost speed of fire sometimes rendered necessary with that type. Some of the reasons that made the Colt grip a necessity on the revolver are present in

jects. When using any make of weapons having the magazine located forward of the trigger the fault mentioned is more noticeable. On the automatic types we must expect and be prepared to accept certain modifications of form incident to a complete change of type, but there is no valid reason why every good feature of a grip, suggested by long and practical experience should be sacrificed to the shape or position of a main spring or the pitch of a magazine clip. The dimensions of a handle, as required for the average hand, on a weapon of serviceable size are such that ample space is available in its interior for a magazine that will hold from seven to ten smokeless cartridges of proper length ranging in size from .22 to .45 caliber, and for such small working parts as may be necessary to enclose within the

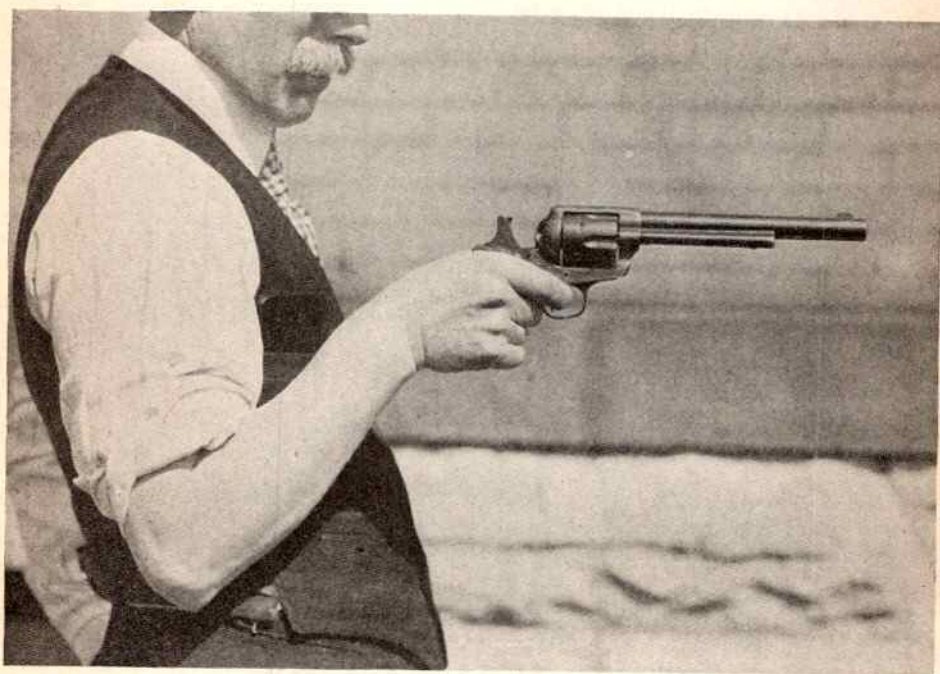


FIGURE 2—The wrong position in hip shooting, showing an unnatural or constrained position of the arm as a result of which the instinctive sense of direction is lost. Any unnatural bend of the arm or wrist confuses the sense of direction, and where the angle of the grip is wrong, there is a conscious or unconscious effect at adjustment which tends to destroy the aim.

the automatic arms. We still need a handle that will fit the average hand, one that, when the weapon is seized and pointed hurriedly, will bring the barrel at once into the line of sight and at a perfect level, even if it is too dark to see the sights or the barrel. If the handle is too broad and flat, no sense of guidance or direction will be felt with the light short barrel which is a characteristic of so many foreign made self-loaders. If the handle is too small and round it will require a conscious effort on the part of the shooter to prevent the weapon from partly turning in the hand. I have used several makes of self-loading pistols that required contact of the trigger finger and a perceptible effort to prevent side swing of the arm while shooting at moving ob-

jects. In the case of a pistol designed to take the smaller sizes, like the .22 caliber, refinements of outline in the grip and reduction of weight and bulk of the pistol to a practical degree, is not only possible but desirable. A pistol of the exact weight and dimensions needed, exquisitely proportioned and perfectly balanced might be had by remodelling any one of several makes already in use. As compared with the handle of a revolver but little is required of the self-loader except to align the barrel, and place the initial shot with average precision, at the desired elevation without going on a still hunt for the sight. This is all that is necessary. With the exception of pressing the trigger the automatic requires no manipulation after the first





FIGURE 3—Showing the effect of two handles of different angles in instinctive aiming. In this picture the two fore-arms are parallel, the left being raised slightly to uncover the gun. It will be seen at a glance how the line of one barrel is deflected from the line of direction, the arm being held in a natural position with no crooking of the wrist to correct the effect of the faulty angle of the grip.

while the revolver must be cocked, returned to the firing position and aimed for each succeeding shot. Any safety appliances located in the handle of a weapon that depends on contact of any part of the hand at the instant of discharge for its release, is impractical and in any thing but a pocket weapon, undesirable. When combined with a double acting lock mechanism in which the hammer is enclosed and must be cocked with the trigger finger against the strain of a heavy main spring, accuracy as understood by modern marksmen is not to be expected. Hundreds of thousands of revolvers and auto-pistols known to the trade as "hammerless safeties" have been made and sold but not a single one of that brand is put to any practical use by a genuine gun man. Cocking the hammer with the trigger finger is fatal to accuracy, but when to this must be added

the farther complication of unlocking a safety by a counter pressure applied at a certain point, the result in accuracy might be imagined, but could with difficulty be demonstrated. The angle at which the handle of a pistol is placed with regard to the long axis of the bore is all important, and as we are not likely to get a model that can be adjusted to every man's needs, the standard as finally decided upon should be adopted only after exhaustive test and experiment.

There are many apparently insignificant things that will influence the hang of a pistol barrel when shooting without the sights. Length of barrel, position of the hand and arm, direction and weight of trigger pull, size and shape of handle, and the anatomy and condition of the marksman's hand will all exert an influence on the direction of fire. When shooting in any direction the barrel should

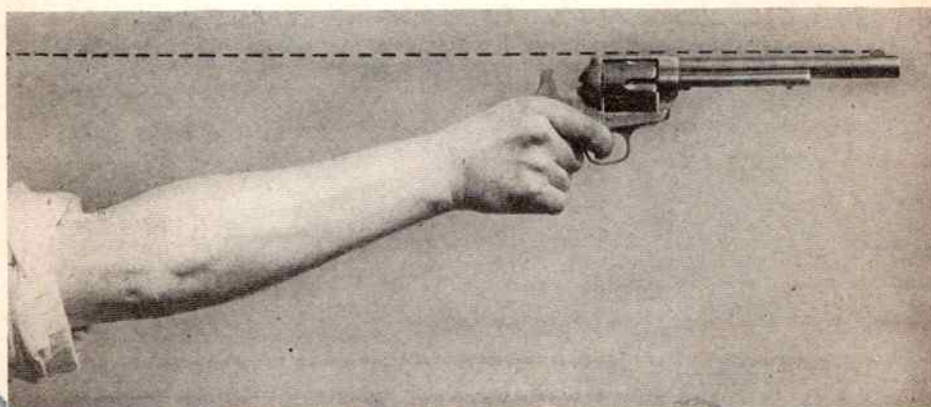


FIGURE 4—An illustration of conscious aiming to show how a gun with a good handle preserves the line of the arm, aids in quick and accurate aiming even when the design of the weapon throws the axis of the barrel two inches above the hand.



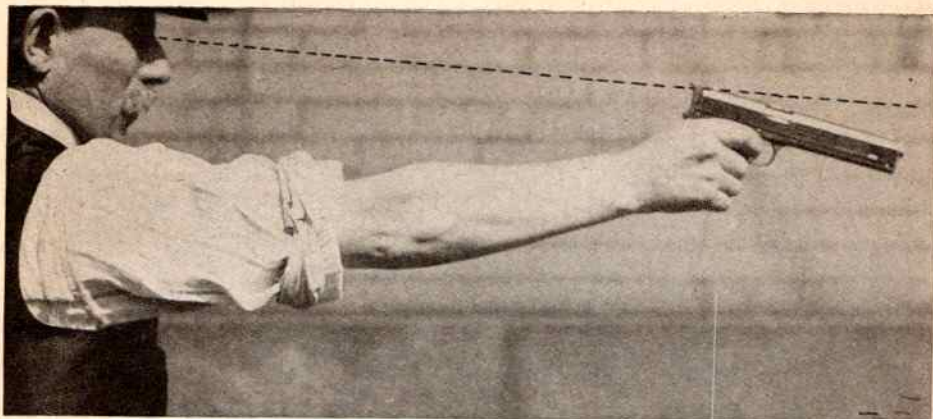


FIGURE 5—Another example of instinctive aiming, showing the effect of a faulty handle. The arm is extended in a natural and easy position, and the wrist is not crooked to correct the bad angle of the grip. To bring the barrel up to the line of sight, there would have to be a decided bending of the wrist, and to hit the object, both sights would have to be used. A true instinctive aim would be impossible.

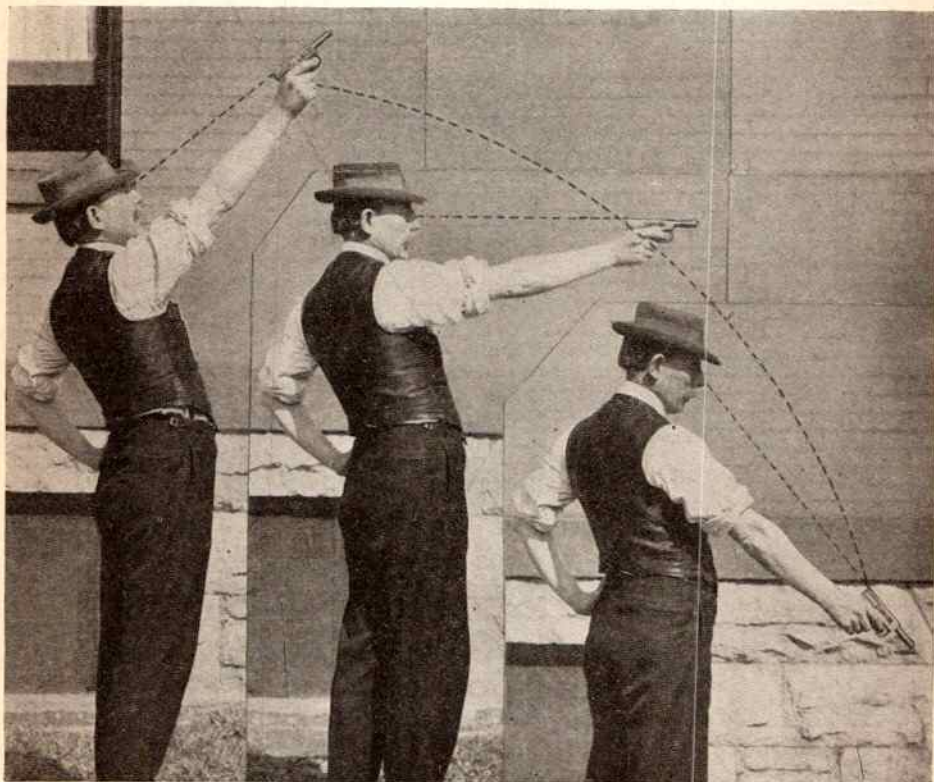


FIGURE 6—A patched photograph showing that when the handle of a gun is set at the proper angle, the barrel will go to the line of sight naturally, at any angle of aiming, without the slightest bending of the arm or wrist. The curved dotted line shows the swing of the gun from the highest to the lowest point, and it will be noted that the arm, the wrist and hand maintain the same line in all three positions. This could not be done with a faulty handle, since there would have to be an adjustment to the line of sight by a bend of the arm or wrist at every change of position. This naturally extended position of the arm is invariably used by expert snap shots. To meet lateral movements of the objects aimed at, it is necessary only to swing slightly at the waist and the vertical changes are met by the swing of the arm from the shoulder the line of the arm wrist and hand remaining the same always.



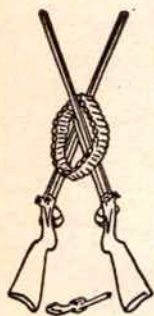
be merely a continuation of the arm-line. Wrist, hand, fore-arm, and barrel should be a straight line whether the shot be delivered from the waist line or from the height of the shoulder. When shooting from waist line, a short movement of the fore-arm up or down will place the bullet at any desired elevation; when the shot is to be delivered from the height of the shoulder the arm should be full extended from the shoulder. From this position, which is a perfectly natural one, the sights may be used and a well aimed shot delivered at any angle, from the ground at one's feet, to a point almost directly over head by merely keeping the barrel in the line of sight. This is the method of holding and shooting practiced by our greatest pistol shots, more especially those who practice at flying objects, or whose work requires an almost instinctive sense of direction. In the advertising literature of some of the very best gun builders are illustrations of shooting positions wholly at variance with the traditions of shooting men and the experience of up-to-date experts. A good shot may sometimes be made from almost any position, with any type of arm, when the sights are correctly lined on the object of aim, but to obtain even fair average results with an arm as short as a pistol, only the best methods should be practiced and these methods are always the most natural ones. A common error of beginners and even of some who call themselves fair pistol shots is to adopt the half arm position. In this position the shooting arm is but half extended and in an effort to bring the sights into line, wrist, hand, and fore-arm are distorted into an awkward goose neck attitude from which all instinctive sense of direction is lost. Good shooting may not be expected from a constrained or unnatural position, and in all really practical work with the short gun, response of one's muscles to the sense of direction should be as prompt and direct as the sense and line of sight. Two points of superiority which the self-loaders must ever hold over the revolver are, that the line of recoil in most of them lies close to the hand, and the trigger pull is direct to the rear.

These two features are of themselves sufficient to ensure good direction shooting if the handle can be grasped in anything like a natural manner. Among those makes of the automatic types which handle well and swing naturally into the line of sight at any angle of fire is the Luger. The angle at which the handle is fixed, is so nearly correct that it would meet with the approval of a majority of experienced shooting men. The shape of the handle is also to be commended; combining as it does in its lines the best features of the Colt Single Action Army revolver and the Remington single shot pistol, it is as nearly perfect for a pistol of the rapid fire type as anything yet devised. Of the Remington single shot pistol the late A. C. Gould, undoubtedly one of the greatest authorities on the pistol that ever lived says, "The Remington single shot pistols are much less elegant pieces of workmanship than the Stevens, the Wurflein or the Smith & Wesson, but there are excellent points about these arms which will be apparent to the inspector as he examines them. They possess great strength and wearing qualities, are accurate, and although not particularly symmetrical, they are well balanced and have *such excellent handles that when grasped there is a feeling of firmness and steadiness which is verified when the shooter attempts to sight it on a small object.*" This, in brief, is the whole secret of designing a pistol handle of the proper size and shape, and locating it at the proper place and angle to secure the best results under the widely varying conditions of service for which the hand gun may be used. Most of the automatic pistols, as made at present, have too much dead weight in the vicinity of the handle to balance well. In many cases the fault might be easily remedied by reducing the thickness of the receiver walls and milling out superfluous stock from such parts of the arm as are not subjected to the heavy strains. Some of the makes of auto-pistols inspected by the writer had frame work and receiver walls as thick and heavy as the corresponding parts of a high power rifle, and which might with safety be reduced in weight from one-quarter to one-third.

## TO OUR CORRESPONDENTS

WE must ask your indulgence for not answering any questions in this issue. We have the usual number of letters, many of them of more than ordinary interest, and we intended to print them, but at the last moment, after the other parts of the magazine had been printed, a timely article came in which we did not want to hold and we could get it in only by leaving out the correspondence. The letters will appear next month, and while we are explaining, permit us to say that so many letters are coming to us now that we cannot always print them quickly. We want you to come to us for information and we will give it as promptly as we can in every instance—R. A. K.

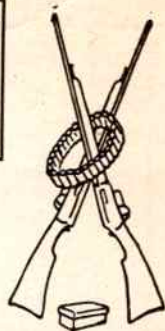




# GUNS AND AMMUNITION

EDITED BY ROBERT A. KANE

This department is intended to be a place for the exchange and discussion of views on any subject pertaining to arms and ammunition, from which no one with an idea to advance shall be barred. The only conditions are that the opinion must not be manifestly absurd, that it be expressed in courteous language and that no personalities be indulged in. Each opinion is printed for what it is worth and its publication does not commit the editor to the view expressed. The widest range will be permitted and our readers are invited to make free use of these pages, but it is important to remember that *under no circumstances will personalities ever be permitted.*



## THE MOST FAMOUS SHOOTING GALLERY IN THE WORLD

By PAUL B. JENKINS

EVERY member of that large class of gun-lovers who like to combine actual shooting with reading everything they can find in print on the subjects of guns and gunnery, has longed to visit two places whose names are frequently mentioned in the writings of the more travelled members of the world-wide fraternity of the gun. These are, of course, Bisley, the English Mecca of the rifleman, and the famous indoor ranges of the Gastinne-Renette Gallery in the city of Paris.

It was the writer's privilege to visit both of these in the summer of 1909. Nor these only, but with them every noteworthy range, gallery, collection, museum, gun-store, curio-shop, or military drill-ground, fortress, fortification, arsenal or armory which he could intersperse between visits to cathedrals, art-galleries, parks and palaces.

Bisley was—well, was simply Bisley! There is nothing quite like it in the world. When the English do "go in for" a sport, how perfectly they do it! Fancy a shooting-ground so great that every separate distance from the shortest revolver-range to the 1,000-yards has a separate and fully-equipped range devoted to its particular weapon and distance, so that no two distances need ever be shot over on the same range, and the whole spread over so great an area that a steam-tram is needed to take the visitor around the whole or to carry the shooters from one range to another! No wonder that with facilities such as these the sport and art of shooting has such a hold on the hearts of the nation that when the great ground was first opened the present Queen herself honored the occasion by herself firing the first shot! No wonder that every summer Britain's sons gather

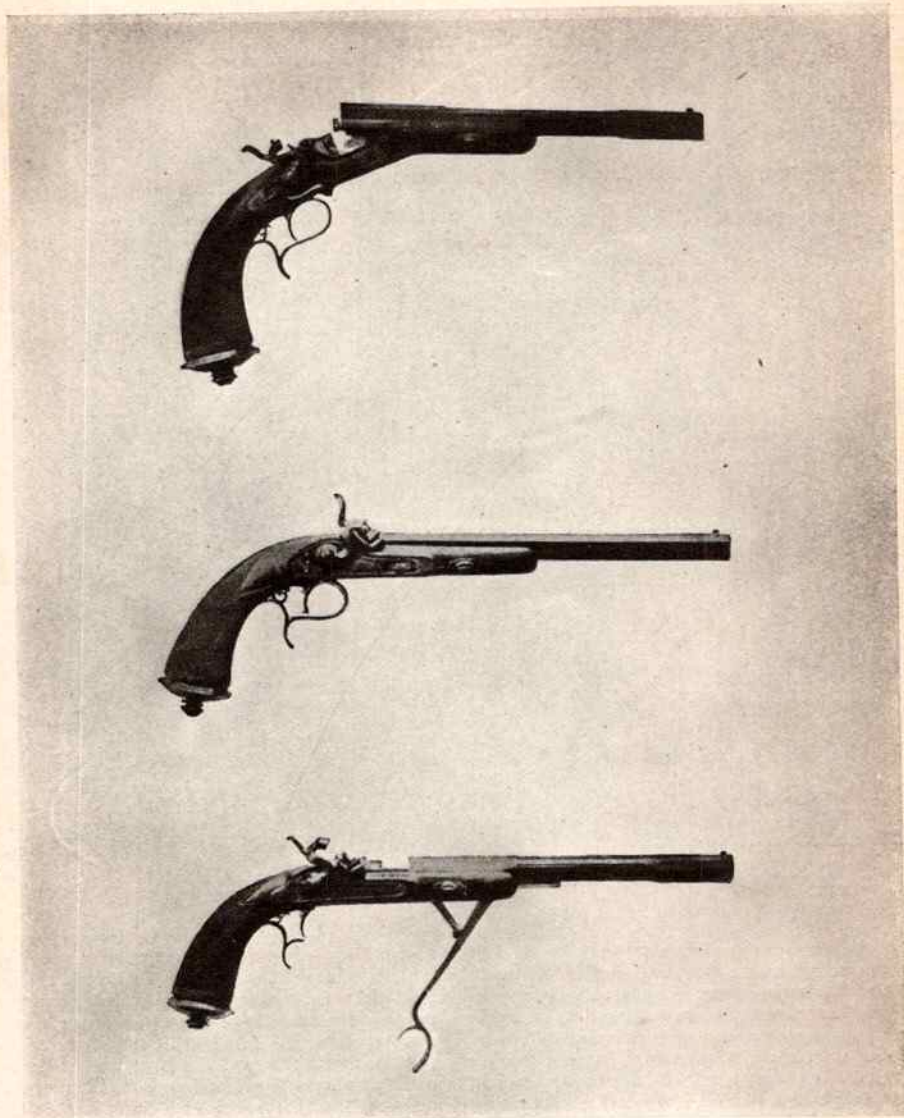
from every corner of the globe there to compete, or that one of the great events of the Annual Meeting is a match between selected teams from the House of Lords and the House of Commons! There is a spirit for you! Fancy our dignified Senate and House of Representatives selecting teams to meet and shoot against one another at our annual gatherings at Sea Girt or Camp Perry! The present writer is emphatically of the opinion that they might do many things worse than thus to participate in that whereby, in time of war, the Nation must stand or fall.

But Bisley must remain to be the subject of another article all by itself—if perchance the "powers that be" in the editorial office of the *Outer's Book* consent. And what Bisley is to the out-door gunner, that the wonderful and beautiful Gastinne-Renette Gallery at Paris is to the indoor shooter.

It was on the 5th of July that the writer suggested to the ten-year-old American who reeled off ten thousand miles of travel like any veteran globe-trotter, that we should "celebrate" by finding the place and pulling trigger. A Fourth of July in a foreign land had been so unpatriotically noiseless from "young America's" point of view as to produce an atmosphere of homesickness for the land of fire-crackers and gunpowder, and the shooting-gallery proposition was welcomed with enormous joy as a near-substitute.

Half-way down the beautiful Boulevard Champs Elysees you turn to the left into the shady Avenue d'Antin and at No. 39 there stands a charming specimen of modern Parisian city-architecture, over whose great plate-glass windows full of fascinating firearms reads the great gold-lettered sign: "Tir Gastinne-Renette." ("Tir," by the way,



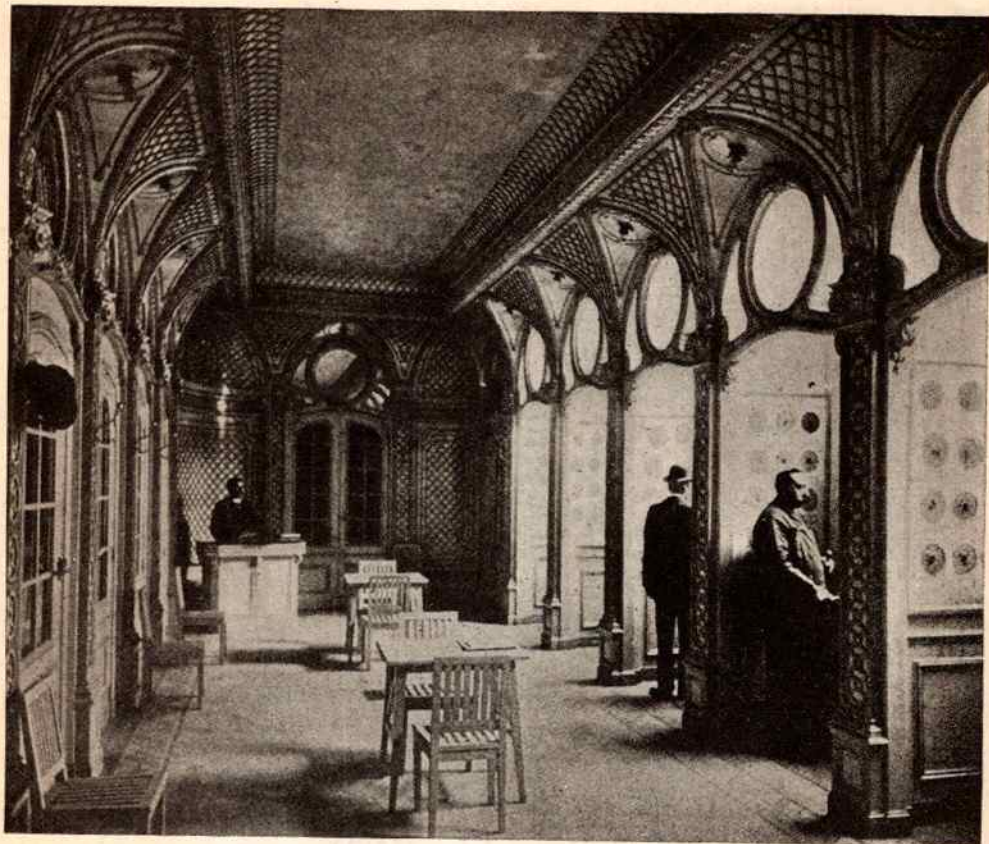


DUELLING PISTOLS (BY GASTINNE-RENETTE)

is a curious and rather untranslatable French word which has no exact duplicate in English, but may be said to be the equivalent of "shooting-place.") Entering, one finds a vestibule that at the left opens into a handsome shop entirely surrounded with glass cases of arms of every degree of workmanship, finish and price, in whose center skilled workmen are busy at repair-work or at polishing the arms in stock. Going through the vestibule, one reaches a pair of typically French glass doors, behind which, as the notice says, are the "tirs," or shooting places proper. These consist of a great hall, beautifully finished and decorated with appropriate pictures and glass-

covered cases, while at right angles to this hall are the separate target-ranges for the various classes of gun-work. Each range is partitioned off separately, as indicated in the accompanying photographs, and contains a loading table and electric apparatus for setting the various moving-targets in motion or reporting by electric bell-annunciator certain classes of successful shots, as presently to be described. The ranges are lighted from overhead and are adapted for many forms of stationary targets for rifle and pistol work, for moving-targets for the same arms, and for that duelling practice which is so dear to the heart of the Frenchman and which constitutes





INTERIOR OF THE GASTINNE-RENETTE GALLERY, PARIS

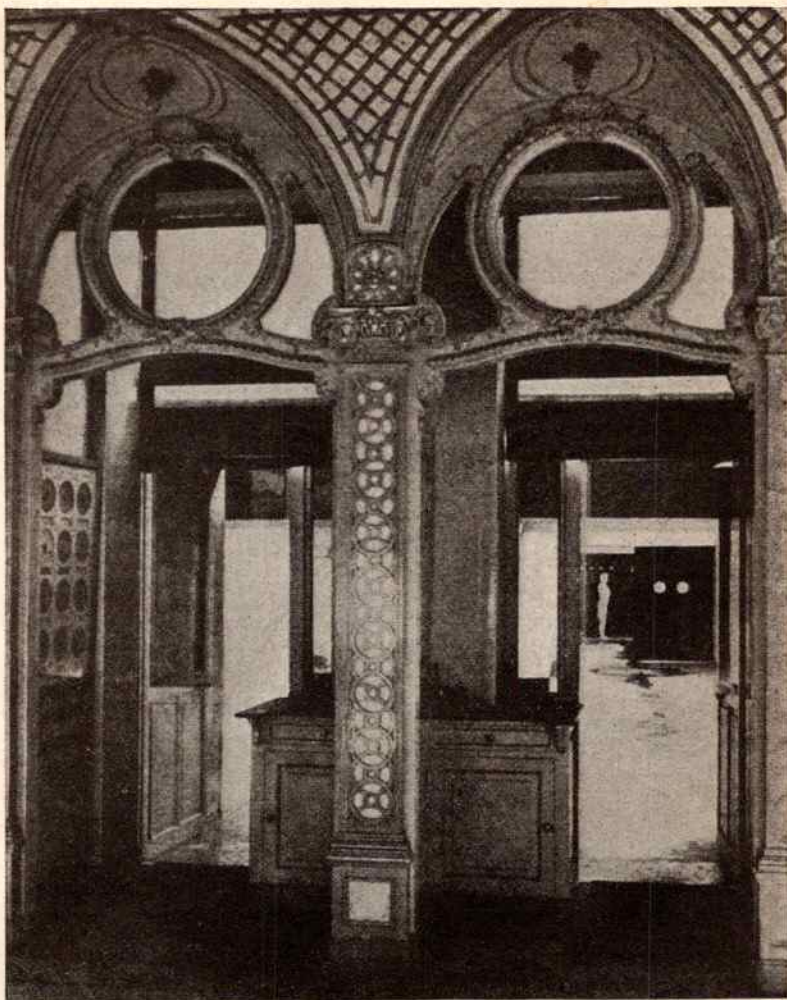
one of the remarkable sights to be witnessed in this famous institution. At one end of the main hall from which the ranges open, stands the "cashier's desk" as an American would call it, at which sits a most courteous and gentlemanly chap with, it is true, a keen eye to the coin, but also with a most polite and patient willingness to explain everything to the visiting foreigner. The range of prices is very fair, running from 30 cents for a dozen .22 caliber shots to 3 cents apiece and upward for the larger calibers—for everything from the tiniest "saloon-pistols" to regulation military rifles and revolvers may be found and used in this surprising gallery.

The weapons most commonly used by the patrons of the Gastinne-Renette ranges are of several classes. Small caliber pistols and rifles perhaps lead in popularity, using chiefly the very tiniest and most excellently-finished .22 caliber cartridges imaginable, much smaller than our .22 "shorts" and hardly larger than a "BB cap" but better in quality and using the queerest little sharp-pointed bullets. Then comes the Frenchman's favorite, the pistol, which is either the hughest revolver he can find (a Colt's usually) or the most wonderfully-made, saw-handled, hair-triggered, delicately-balanced, superbly-finished, single-shot pistols that

a gun-lover ever sighted over; and which are to be had here in either breech-loading, muzzle-loading, or in a third system which is neither the one nor the other, as we Americans use the terms, and yet is a bit of both! Finally there are larger caliber rifles, 38's and the like, which the French call "carabines," and which vary from "carabines de repetition" (repeaters) to "carabines de chasse" (hunting rifles). The targets used include everything from the stage-shooter's chalk discs, clay pipes and similar bric-a-brac to neatly printed card targets especially made for the Gallery, moving rabbits printed in white on black targets and operated back and forth across a semi-stage by electricity, and—ever dear to the countrymen of Alphonse and Gaston—the life-size, steel-silhouette, man-targets of the duellist.

And there is always "something doing" in this remarkable place. At one range some strapping cavalry officer in gorgeous dress-uniform is blazing away with a giant Colt, firing shot after shot double-action fashion—and doing amazing work, too—to the delighted admiration of a dainty Parisienne in a wonderful "creation" of lace and silk, who laughs rippingly and pats his broad shoulders as he lays down the smoking cannon and scans critically the target card which the obsequious





INTERIOR OF THE GASTINNE-RENETTE GALLERY, PARIS, SHOWING TARGETS

range attendant brings at the conclusion of the "string." At the next range a would-be duellist is fiercely squaring himself sidewise toward the man-target, and as the attendant counts vehemently the ominous words of the famous "code" the gunner snaps his poised weapon down to a level-bang!—and instantly the tiny bell in his booth rings its trill, indicating a hit on the silhouette. In the next alcove some earnest Tartarin is assiduously practising away with his pet "carabine de chasse" at the little white rabbit that scoots merrily across the steel background, doubtless bethinking himself of the coming "season" among the partridges of Britanny or the hares of the Midi. While all this is going on in the various booths, chance spectators, onlookers, or participants awaiting their turn, are strolling from one shooter to the next with critical eye or scanning the glass cases of elegant arms or studying the countless targets that are preserved in frames

under glass and bear the signatures of some of the most famous shots of Europe—the King of Portugal, Walter Winans the Anglo-American, the Czar of Russia, President Fallieres, and so on.

It is probably the duelling-practice that excites the greatest curiosity among the chance American visitors, as being a form of shooting unknown among ourselves. Three features about it are worth comment; the weapons, the shooters, and the manner of conducting the shooting itself.

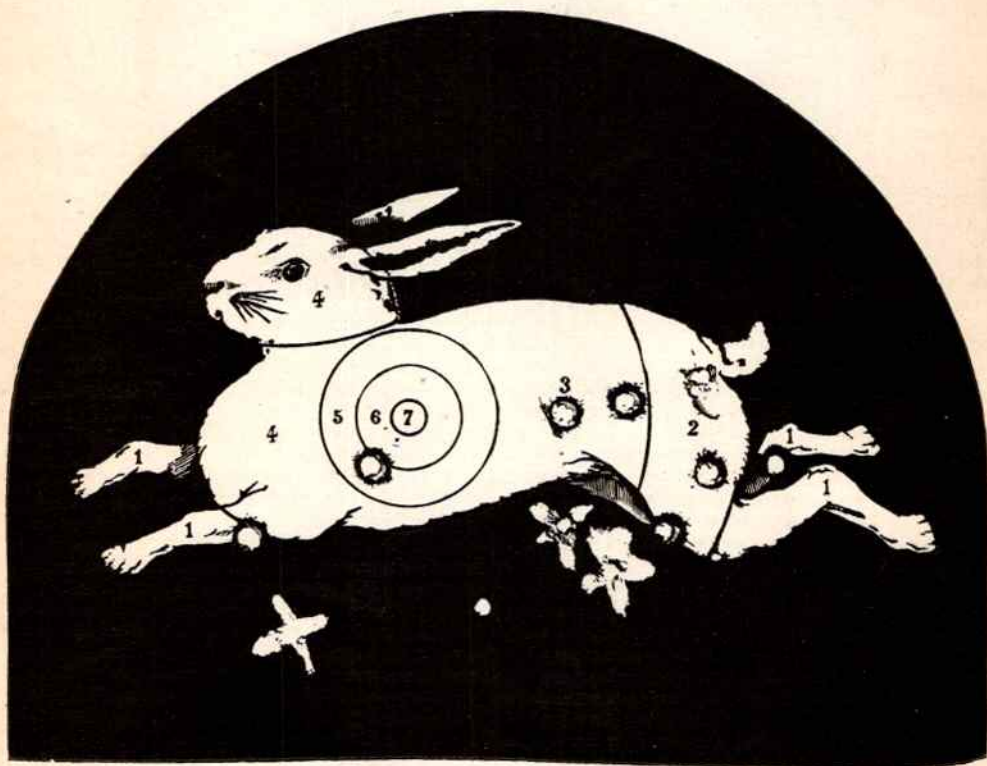
The favorite weapon among this class of shots is illustrated herewith—an actual specimen, made by the management of the Gallery, and for which they are famous. Its shape and lines will appeal to every lover of the "one-hand gun," while its perfect weight and balance must be felt to be appreciated. As commented earlier, it is neither breech-loading nor muzzle-loading, as we understand the terms, and is yet a bit of both. To operate it, the under-lever is depressed, when the



barrel moves directly forward, without tipping. This motion leaves visible the chamber proper, a steel cylinder projecting from the center of the breech-face of the weapon. Holding the opened pistol muzzle upward, the attendant deftly dips a tiny thimble-like dipper into his ready glass saucer of reddish smokeless powder and transfers a charge (that I guessed to be about 8 grains) to the disclosed chamber. He then picks a shiny new round lead ball from another saucer and with finger and thumb sets it on the mouth of the chamber, when a return of the action lever returns the barrel to its closed position and obviously seats the ball directly into the rifling that is thus drawn down upon it as the barrel slides back over the chamber. Placing a tiny brass cap on the nipple, he sets the hammer at full cock and places the ready weapon in the shooter's hand, with many a caution—if he thinks it needed—as to the exceeding delicacy of the hair-trigger. And it is perfectly true that of all the innumerable trigger-pulls that the writer has ever tried, he has never touched one of the incredible delicacy of these Gastinne-Renette arms. The details of these pistols, by the way, are that they weigh 2 pounds 6 ounces, are .44 caliber, and the barrel is 10 and  $\frac{3}{16}$  inches long. In speaking of their operation Mr. L. A. Himmelwright (chapter, "The Pistol and Revolver," in "Guns, Ammunition and Tackle," American Sportsman's Library) says that their loading is "very tedious and inconvenient to operate." Ex-

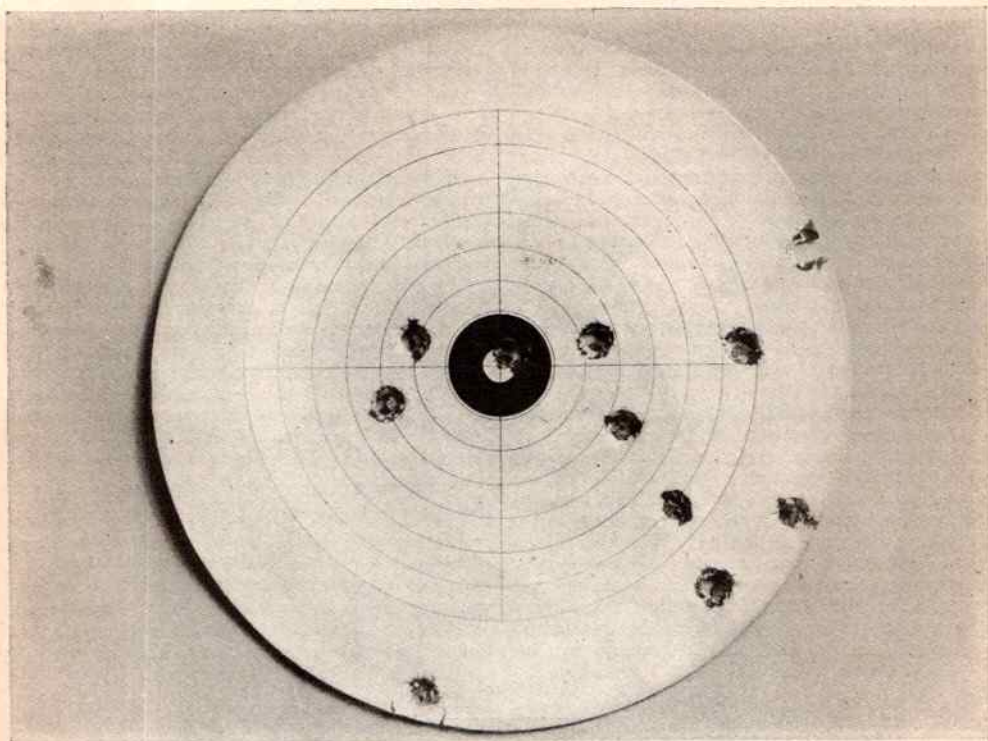
cellent authority that Mr. Himmelwright of course is, the writer ventures the guess that he has never seen the amazing dexterity with which the expert attendants at the Gastinne-Renette accomplish the described process of loading, for they whip through it with a neat swiftness that must be seen to be believed, hardly taking five seconds between shots!

The shooters at the duelling-ranges seemed to be of two classes, exclusive of the occasional military man, gentleman or chance tourist who may occasionally "take a crack" for the novelty of the thing. One type was obviously of the "gilded youth" among wealthy, idle, fashionable Parisians—the kind of vacant-faced, cigarette-in-mouth, would-be-smart chap who evidently has more money than is good for him. In Paris this breed evidently "goes in for" duelling-practice to while away his time until he can delude some luckless American heiress into marrying him. The second class consists of an apparently "fast" lot of older club-men, frequently with strong, rather determined faces, and who would be good-looking despite their striking clothes and queer airs if it were not for the unmistakable signs of dissipation that are written all over them. And how they can shoot! Jest about the "bloodless" French duels may be all very well in the "funny column" of American newspapers, but I would hate to have one of those chaps shoot at me after seeing what they did to those man-targets!



THE AUTHOR'S SCORE ON A RUNNING RABBIT





A TARGET MADE BY THE AUTHOR

The method of the duelling-practice is interesting too. When the attendant hands the loaded weapon to the shooter he sets in motion a "metronome" or piano-practice time-keeper, which ticks off the seconds with loud clicks. By these the attendant counts off the formal words of the famous "code," shouting sharply: "*Attention! Feu! Une! Deux! Trois!*"—that is, "Fire! One! Two! Three!"—and somewhere between the second word and the last one the duellist's pistol roars, an electric bell trilling instantly if his aim and shot have been true.

Naturally, no fervent devotee of "lock, stock and barrel" could see all this gun work going on without wanting to have at least a little try at it himself. Fortunately the writer's supply of near-French proved adequate to indicate his desires in that line, and, preferring to try the ordinary card-target style, he was soon installed in one of the booths with an attendant busily charging one of those wonderful pistols from his array of glass saucers of powder and balls. With many a caution as to the minute pressure that would suffice to set off the hair-trigger, the weapon was placed in his hand—and what should happen but that the cashier, the other attendants, and about half the spectators crowded around behind the open booth to see how the American should shoot! It was a pretty trying situation, to feel his country's reputation resting upon his amateurish skill, but there was nothing for it but to hold that dancing pin-head sight *just* touching

the "bull" at "six o'clock"—*bang!*—and the spectators whipped up their opera-glasses to look, and the cashier exclaimed: "*Ah! Ah! Ciel! c'est une mouche! Ah tous les Americains qui viennent ici ils tirent comme ca!*" (Translation: "Heavens! It's a bulls-eye! All the Americans who come here they shoot like that!") And it *was* a "bulls-eye," too, for which Heaven be thanked! (A part of the target is reproduced here, though the writer regrets exceedingly that it shows that not one other succeeding shot was as good, though those Frenchmen seemed somehow to think that it was a very decent exhibition at the fifty feet or so of distance they use there.)

At the next booth a man had just finished shooting a dozen shots at one of the running-rabbit targets, and the writer simply *had* to have a try at that too. As mentioned, and as shown in the reproduction of the original target, the rabbits were printed in white on a black card (the body-portion being six inches long from breast to tail), and were run by electrically-operated mechanism back and forth across a sort of miniature stage, at a distance of—to make a guess at it—some sixty feet. The card does not merely move straight back and forth, but is turned when it disappears behind the "wings" at either end of the run, so that, the rabbit being printed in exact duplicate on either side the card, first one side of the card is seen to shoot at and then the other as the run is made in the opposite direction, which statement is necessary to explain how the bullet-marks appear



to have been made from opposite sides of the card, as indeed they were. Asking for the correct arm to use at this kind of shooting, the writer was handed a rather heavy, single-barreled, target rifle style of gun, with a curious way of opening at the breech, for it had the opening-lever below the fore-end, like the old "Lefauchaux" guns, but did not tip and instead moved horizontally on a vertical pivot at the front of the fore-end, the breech thus opening by moving to the right for the insertion of the cartridge. The cartridge itself was a bit of an oddity, for while it was about the size of a "38 short" it was "center-fire" and yet had no cap visible in it at all! The secret of it proved to be that the cap was set on the *inside* of the cartridge-head, the firing pin striking the outside of the head with sufficient force to fire the cap within.

Again the height of good fortune—for an instant, at least—favored the visitor from over seas. The gun loaded and in hand, the attendant touched an electric button that started the tiny white rabbit scooting to and fro—and looking about a mile off when one remembered those spectators crowding to look over one's shoulders! But the thing had to be done, so here went for it—*bang!*—and a chorus of exclamations went up from the opera-glass wielders. Borrowing one to look, the writer discovered for the first time that the distant bunny had a small circle printed on the shoulder-portion

of the body, and by another miracle this first shot had landed therein! Alas, that none of the succeeding shots were as good, but the very modest degree of success indicated by the rabbit-card here shown seemed sufficient to elicit the respect of those Frenchmen, for when one of them asked in what portion of the United States the writer lived in and he answered—as the safest way of naming some portion they might happen to know—that it was "near Chicago," the questioner commented: "Ah! c'est tres loin dans l'ouest, n'est ce pas? Il faut que monsieur il tire les cerfs dans les montagnes sauvage ou les grands forets?" (Translation: "That is very far in the West, is it not? It must be that Monsieur shoots the deer in the wild mountains or the great forests?") "It was to laugh" indeed, but of course that would never do, so the writer—remembering the head of his beloved little buck on his study wall at home—bowed gravely and intimated that the guess was correct.

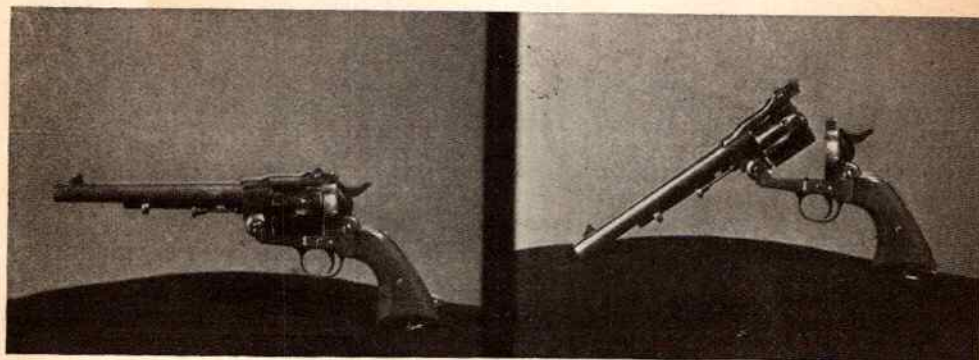
And when at last we paid our score and tipped the attendants and secured the cards as souvenirs of the occasion and got outside on the Champs Elysees again, we had to sit down on a bench and have our laugh out over the fun of it all—while young America sat and ate a French "ice-cream cone" and said: "My! Didn't we have a good time there!" And we certainly did!

## WHO KNOWS THE MAKER?

THE history of the arm shown in the accompanying cut would no doubt be extremely interesting if known. The photo was mailed to us recently with the following explanation: "The weapon was brought to Denver by a soldier of the Spanish-American war returning from Cuba. It was pawned or sold by him to a second-hand dealer. I bought it of the dealer and presented it to a friend in Denver who is a gun fancier. As will be seen by the cut it has the same general outline as the Colt Single Action

Army, with loading gate and ejector rod on right side, but with the hinged frame and barrel catch of the Smith & Wesson. While in my possession I sent it to the Colt people for identification. They returned it saying that it was a hybrid and refused to father it. Now whose kiddie is it?"

In the interest of science and the Census department will some one confess, or at least throw some light on the origin of the little stranger? Notwithstanding the bar sinister the infant may be of royal blood.



AN INTERESTING HYBRID REVOLVER



# ABOUT THOSE COLORED SHOOTING GLASSES

## A REPLY TO MR. CROSSMAN

By CHARLES NEWTON

IN our childhood it was firmly impressed upon us that the Good Shepherd, when he had ninety and nine of His sheep safely in the fold, but one insignificant little cosset lamb who thought he knew more than his mother had stayed out late nights with the men, forthwith went out into the blizzard and reclaimed the lamb from the penalties of his inexperience; and this was considered praiseworthy. Also we were duly impressed with the fact that the Father does not allow a sparrow to fall to the ground without his notice, and we then and there resolved never to despise the day of small things, as they sometimes grow.

Following this resolution, and discovering from a communication in the May issue of *Outer's Book* that our article in the January number on the subject of colored shooting glasses had failed of comprehension by just one of the many thousands of readers of this magazine, and being anxious that this stray lamb shall find food and shelter even though we must walk half a mile up hill to carry it to him in a bottle, we will endeavor to clear him up on the question.

One proposition which mystifies Bro. Crossman is how the eye can see by means of the yellow rays and yet be irritated by the blue rays. To quote him exactly:—"Yet we find the statement that the eye is sensitive to opposite ends of the spectrum—that it is not only sensitive to the yellow or image-forming rays but that it is also sensitive to the violet or chemical rays which Mr. Newton proves are stronger in form absolutely invisible to the eye." Before trying to clear the gentleman up on this point the writer will observe that he made no such statement as is attributed to him in the above quotation. If the quotation above has any meaning at all it is an attempt to make a play upon the exact definition of the word "sensitive;" whether it means ability of the eye or strictly of the brain, to see by means of the yellow rays or to feel the effects of these blue rays. In that case the effort fails as in the article criticised the writer did not use the word "sensitive" in connection with the eye at all, a careful examination showing that the word appears but once in the entire article and then in speaking of "the sensitive plate, or retina" in comparing the eye with the camera.

But had the word "sensitive" been used as intimated, such use would have been entirely proper as no one whose corns had not been trodden upon hard would ever try to split hairs over the difference between the eye being sensitive to the luminous element of light, or vision, and being

sensitive to the irritation of the blue rays of light, or suffering pain. The eye is "sensitive" to a grain of sand or a cinder, properly, or rather improperly, located, yet neither is a distinct aid to vision. Therefore the eye may be said to be sensitive to the luminous elements of light coming on the yellow rays and sensitive to the irritation of the light coming on the blue rays, even though this may seem to our friend to be making both ends (of the spectrum) meet.

Mr. Crossman then wonders how the blue rays can have a soothing effect upon the body and yet be irritating to the eye. As an example of such a paradox I will cite, what he may possibly remember from his childhood days, soft soap. This soothes the body but irritates the eyes therefore blue light need not stand alone in this regard.

The use of blue glasses in cases of weak eyes is cited. He does not state what ailed the eyes. Sometimes weak eyes may need one treatment, sometimes another, as when we are ill we sometimes take medicines which are very irritating. But Mr. Crossman seems to think that a blue glass *increases* the amount of the blue rays admitted. It does not. No more blue rays pass through a blue glass than through one absolutely transparent; the only difference is *only the blue passes*, the others being screened out; the composition of the light is not changed merely part of it is excluded.

If Bro. Crossman had ever had his photograph taken by the light of a mercury vapor lamp he would have no doubts on the question of a blue light being irritating to the eye.

The writer is charged with having stated that "luminosity is but one of the elements of light." Guilty.

Bro. Crossman says "luminosity being merely the quality of being bright, a rather strange statement to make about light itself," therefore he may be trying to split hairs upon the definition of "luminosity." If so he can do so alone as this world has so much of work or of play for the most of us we cannot spare the time to help him split them. The writer is satisfied with Mr. Crossman's own definition, given above, "the quality of being bright," and is inaccurate enough to be content to attribute to light this quality.

This is probably the proper time to express to Bro. Crossman our apologies for having last fall commented upon the way his bullets dropped, but the punishment is not sufficient as yet to bring about the proper degree of penitence. Shoot again.



# THE TELESCOPE SIGHT

## PART II

By E. C. CROSSMAN

THE sighting of a telescope is merely through the cross-hairs being in the focus of the object glass and being in the line of collimation of the glass itself. The stops have nothing to do with the sighting line, as some people suppose, but are merely put into increase definition. There is no front or rear sight in the telescope, outside that of the cross-hairs and the line of vision passing through the lenses.

Through the short "sighting radius" of the telescope sight, a very little difference in the movement of the tube, makes a great difference in the strike of the shot on the target. The problem is merely one of proportion, the movement of the sight being in proportion to the movement of the point of impact on the target, as the distance between the telescope mounts is to the distance of the rifle from the target. For example, if the telescope mounts are a foot apart and the tube is moved one-fiftieth inch, when shooting at 600 feet, the next shot will strike 600 times one-fiftieth inch or a foot away from the shot just before. Hence the necessity for micrometer mounts in target shooting and also the reason why the long tubes were preferred by target shooters, as being a little more accurate and offering opportunity for finer adjustment.

The milled head that is used to move the cross-hair frame in the German design of sight can be made into a micrometer adjustment by having the thread working through the frame cut on a certain pitch and the head of the screw graduated into one-tenth parts.

A micrometer is merely an instrument for measuring small spaces. Applied to a rifle sight adjuster, for example, a thread is cut on a round bar of steel, the thread having a pitch for instance of one-thirtieth inch. It follows that if a nut or sleeve be turned around once on this bar that it will move up or down one-thirtieth inch. If this sleeve is graduated into five equal parts around its circumference and it is turned through but one of these divisions, the sleeve will be moved one-fifth of one-thirtieth inch, or one-hundredth-fiftieth inch. This is the adjustment used on the Winchester telescope sight.

The Germans, in their telescope construction, show the most reckless disregard of cost in their effort to get results—but they deliver the goods. For example, the average American glass is made with  $\frac{1}{2}$ -inch or  $\frac{3}{4}$ -inch tube. The lenses are rarely more than  $\frac{1}{16}$  inch in diameter. The larger the lens, the more expensive it is. The German makers use lenses twice this size and therefore more than double the cost of the smaller ones but they get light and field that American makers cannot touch—or rather, do not, as achromatic lenses are available to any one.

The Hensoldt three-power glass uses an eye lens of  $1\frac{1}{2}$  inches. The Goertz "Pernox", probably as fine a glass as there is in the world at the present

time, has an object glass of  $1\frac{1}{4}$  inches and an eye lens  $1\frac{1}{4}$  inches across! The resulting illumination and field must be seen to be appreciated.

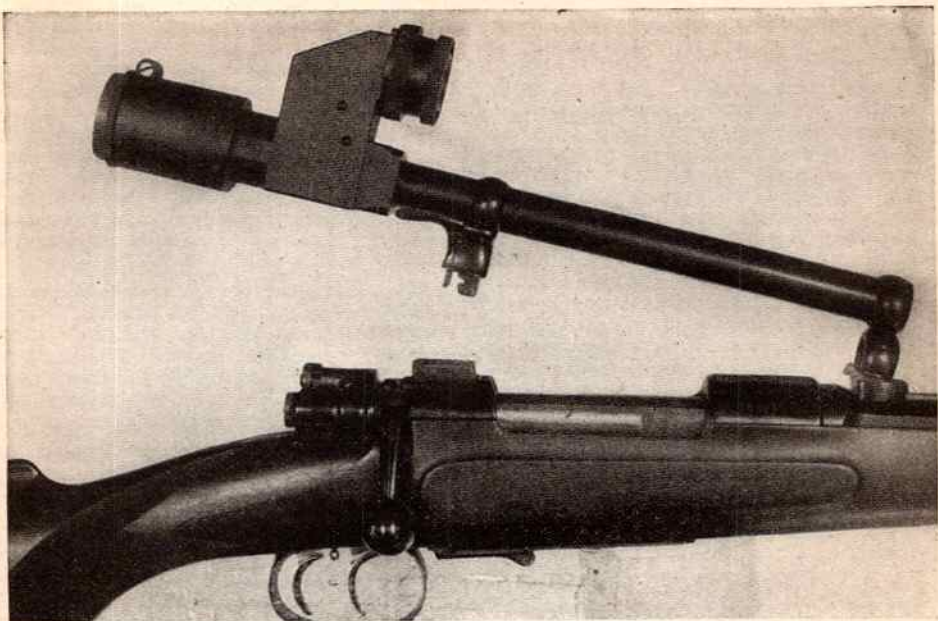
In addition to this the eye relief of the German glass is about double that of the typical American glass and the eye can be moved forward or back two inches or more without losing the field. Lateral relief—side movement of the head—is also much greater than with the American plan of glass. Those who have used telescope sights can appreciate what it means not to have to get the head into a certain unvaried, micrometer-measured position to find the field of the glass. This large eye lens construction, used on all German glasses is responsible for the long working distance. On the Hensoldt for example, the eye can be brought to within three inches of the eye lens or drawn back nearly seven inches away without losing the field. With an eye relief of three inches or more there is none of the ever-present danger found with cheap glasses, that of getting into a head-on collision with the telescope when the rifle recoils.

The Voightlander people put out a glass that gives the full field of view of the ordinary glass but which has *eleven inches* working distance. It is designed to mount on rifles of the Mauser type, with the entire instrument forward of the receiver, and thus with the action clear of any hindrance to the use of the bolt.

That a properly constructed system of achromatic lenses of good size will give the results obtained from the prisms, is shown by the Goertz "Certar" glass, with 17-foot field at 100 feet in  $2\frac{1}{2}$ -power. The illumination of this glass is practically as good as that of the prismatic types. In this glass the eye-piece consists of four achromatic lenses, without the customary stop. The objection to prismatic glasses is that the cost is great and the prisms must be mounted with absolutely unchangeable relation to each other. It is easy to mount them in this manner but it costs money to do it and to do the adjusting in the first place. Yet we find the Hensoldt selling for \$13.50 in Germany, minus the mounts, and costing but \$19.57 laid down in the United States after paying the duty. Mounts cost \$8.00 in Germany, with 45 per cent added to them for duty if they are brought over. To compare such a glass with those foisted on a confiding American public during the past twenty years, is to compare a modern prismatic field glass of the Perplex type with a \$2.98 dark'n-midnight telescope.

For a review of the advantages of the American telescope mounts, offered until the Winchester scope came out, see page 125-126 of the book "The Bullet from Powder to Target," by Dr. Mann. He reviews the trouble he has experienced with telescope mountings and states that he had finally to design and make mounts for himself, so unsatisfactory were those obtainable. Some





CARL ZEISS PRISMATIC TELESCOPE ON THE WRITER'S SAUER-MAUSER

gems regarding the scope mountings available include:—

"A visit of three days was made to the largest collection of firearms in the country and extended examination indicated that mountings of telescope sights were considered of least importance of anything about the rifle. One had patterned after another for years and a hundred-dollar rifle was fitted with mountings that looked like 'thirty cents.'"

Not surprising that telescope sight has failed to come into its own with such offerings put before the rifle shooting public. The Doctor finally designed his own mountings and they proved so successful that a telescope company promptly borrowed them in spite of the fact of their being patented.

The telescope mounted on a light rifle with heavy recoil, subject to occasional unavoidable jars and intended to be taken to regions where gun shops are not and where opticians are still rarer, is a different sort of instrument and must be built in different fashion.

A desirable telescope sight should have a good field first of all. This means with at least 15 feet at 100 feet with 2½ powers. A glass with but 4-foot field at 100 feet, in this low power is of little use on a hunting rifle. The glass should have good illumination, with freedom from chromatic and other errors found in some cheap glasses. It should allow at least 3 inches eye relief. It should have some lateral relief—that is allow the head to be moved a trifle from side to side without losing the field. It should be of strong construction, both in cross-hairs and in the tube itself. The elevation should be obtained within the tube either by means of the cross-hairs or by moving

the object glass. Lateral adjustment should be provided. It should be without delicate micrometer mountings, nice for target shooting but impossible on a rifle with heavy recoil and light weight.

The instrument should be of light weight and be as short as possible, to admit of carrying comfortably in a leather case by the side when off the rifle. It should come off the rifle at a touch of a catch and go on as easily. The vertical cross-hair should be graduated and the distances subfended by the graduations at the different ranges ascertained by shooting the rifle. A glass giving two powers by changing the eye piece is a very desirable instrument in this respect and is made by one manufacturer. The glass should be fitted with soft rubber eye cup extending from the eye piece to the eye to cut out all light except that from the telescope and also to quickly guide the eye to the correct position. For hunting the glass should not be over four-power.

The question of power is one on which many hunters make a mistake as do other people in purchasing field glasses. High magnification is useless if the object appears to shake, from the magnified movement of the rifle or of the field glass in the other case. With each increase in magnification we unavoidably get decrease in field and light. A glass of three power is about right for hunting, while many foreign glasses are but two.

For example a three power glass would bring an object 600 yards away to an apparent distance of 200 yards away, enough for most circumstances. Higher powers than four are hard to hold without showing a tremble at the target, very disconcerting. After a climb up a thousand foot hill or with the buck fever sending the blood pumping through



the arteries, even the four power is too high. Lying down or sitting, higher powers are useable, of course.

The German telescope of the present day differs very much from the long clumsy tubes used on our target rifles at the present time. They are short, with rather thick tubes—to accommodate the large object glass and are of very solid construction. The sight used by the Government, probably the most complete one ever made, remind one of a model of a new style gas engine and one almost expects to hear it puff and see the wheels go round.

Having turned out a glass of strong enough build to stand the jar of the recoil and of occasional falls that are the lot of the rifle taken into the game country, the Germans proceeded to turn out mountings that would stand the racket as well as the scope. These are without motion between the scope and the rifle, are without micrometer adjustments and are put on to stay—until the user wants to take the glass off. A typical mount is that used by the Zeiss Company. Two hollow plates are screwed on the Mauser receiver, one on the part

[The German made glasses are much shorter than our own, offering an easy method of disposing of the glass when not needed by tucking it in its scabbard without feeling that you have a sword dangling about your legs. The Zeiss for example is but six inches long without its false tube mounting, the Hensoldt is ten inches and the Goertz Pernox is the same length. All of the German makers sell scabbards of leather, to fit the glasses they list. This is the proper solution of the question of carrying the scope when it is not wanted on the rifle.

The leading German telescope sight makers include such names as Zeiss, Goertz, Hensoldt, Fuess, Voightlander, Busch and the Perplex people. Some of these are well known in this country for their other products and to say that the telescopic sights of Zeiss or Goertz or Voightlander are as good as their lenses is saying a great deal.

Optically the most wonderful of them all is the Zeiss, giving splendid light and field of 23 feet at 100 feet in the 2½ power. The advantage of this in the case of a running deer for example, is evident.



A FULL LENGTH VIEW OF THE RIFLE AND TELESCOPE

where the barrel joins and the other on the covered over part or bridge of the receiver. These remain with the rifle. The scope itself is fitted with a pair of prongs fastened to the dummy tube by a band as shown in the cut. The prongs turn down into the front plate from a perpendicular position and lock tightly when the scope is in place. The rear mounting has another pair of notched prongs into which fits a sliding plate set in the fixed part of the mount. A pressure of a spring catch drives this plate back out of engagement with the prongs and allows the scope to be lifted off the rifle, the turning motion dis-engaging the front prongs from their recesses in the plate. Thus the glass is detachable at a touch, yet is strong and not likely to be knocked out of adjustment by a blow.

Another point worthy of note is that the German glasses are mounted with hollow mounts, allowing the use of open sights through the openings in the mounts.

The proper place for a telescope on a bolt action is about ¾ inch to the left of the line of the barrel, allowing the use of the clip and not interfering with the bolt handle.

As a rule the fields of view of the German telescopes are:—

|               |                           |
|---------------|---------------------------|
| 2½ power..... | 18 to 23 feet at 100 feet |
| 3 power.....  | 17 feet at 100 feet       |
| 4 power.....  | 13 feet at 100 feet       |
| 5 power.....  | 10 feet at 100 feet       |
| 5 power.....  | 7 feet at 100 feet        |

The advantage of the lower powers in field and light is worth more to the user than the increased magnification—and tremble.

The writer has used or examined closely the Hensoldt, Voightlander, Zeiss and the Goertz Certar and Pernox. While the Zeiss optically has the lead, yet the writer is more taken with the Goertz Pernox than with any glass he has ever seen, it being of the straight tube shape instead of the ugly joint shape of the Zeiss and having a field and light positively wonderful. In fact, the user, keeping both eyes open and placing the field seen by the naked eye beside the field seen through the glass, will declare that the telescope field is the brighter of the two. Such a glass is a revelation to the man who has seen only the old style American telescope.



The feasibility of using the telescope sight has been demonstrated by the English and German hunters in the roughest country, while the advantage of the sight for game shooting has been testified to by almost every big game hunter who has tried it. Every English maker of big game rifles lists the German telescope sights for his arms, many of them having special mounts for their rifles to handle the German scopes. And as the English big game rifles are used in rough country and in sections far from workshops it is evident that the Englishmen must have had few hard luck stories to tell of the telescope sight. Normally a man does not invest from \$50 to \$75 in an appliance to aid his shooting if the experience of others has been against it.

It's hard to understand why it is not used more in the United States. Our sportsmen are waking up to the fact that the world does not end either on the shores of the Atlantic or on the Pacific and that other makers than those of American extraction turn out desirable things. The cost of the glasses is high but the man who will spend \$500.00 in the endeavor to get a shot at a grizzly will not cavil at paying \$40.00 for a good telescope—if he realizes its advantages and that it is reliable. The poor excuses offered American sportsmen in this line have done much toward making a prejudice against

the telescope sight but with such sights as available a modification of our new army sight or of the German makers mentioned, it would seem that the telescope sight should be almost as popular among American sportsmen as among the foreigners.

The Winchester people lead the procession in target glasses with their new offering.

Old John Sidle of Corning, California, one of the oldest sight makers in the United States, is working on a sight after German designs and has already shown the writer a telescope equalling the German glasses in field and nearly equalling them in other qualities.

He has turned out a glass but 7 inches long and with a field equal to the German makers, has designed new mountings and the writer believes that the time is coming when Americans can obtain telescope sights equal to those of any make without having to go to German makers for them.

With the Winchester sight available, with the Government sight for sale to civilian riflemen and with Sidle at work on a satisfactory glass, it looks as though the telescope sight was at last coming into its own.

For any rifle, be it of the target, hunting or military persuasion, for shooting at grizzlies, paper targets or tin cans, the telescope sight is the thing.

## A SINGLE ACTION SWING-OUT

By GUS PERET

FROM time to time I have talked with revolver shooters and have always wanted, and have found most every one else I have talked with wanting, a single action revolver, with a grip like the Colt's single action army. A few years ago we had a great deal written on the subject by such able writers as Ashley, A. Haines, Robert A. Kane, A. W. Lowdermilk, Pascal De Angelis, Capt. Hardy and others, but the revolver was never produced because the Colt people could not see where there would be a big enough demand for the revolvers to warrant the expense of putting in the machinery it would take to make the revolver.

We all remember that they finally said they would see if there was a big enough demand for it through the jobbing houses where they sold their goods. When they asked most of the jobbers I expect they said that they could not see where there was any great demand for it, and that the double-action swing-out cylinder revolvers were good enough. Of course we all know that most of the jobbing houses did not know what the practical shooters and men who had hard service for a revolver wanted, so the idea fell through.

Well, I still kept thinking and wanting a revolver of that kind, so J. W. Cowan, a very fine gunsmith, at last tackled the job of making the frame and lock parts up by hand and using what parts of Colt and Smith & Wesson revolvers we wanted.

A Smith & Wesson .38 Special Target barrel, cylinder and yoke was ordered from Smith & Wesson and a single-action army trigger guard, back strap and stocks from Colt's to give the revolver the Old Colt's Frontier Grip.

Mr. Cowan has the frame completed and is at the time of writing making up the working parts. The revolver when it is completed will have the famous Colt's Single-action Army Frontier Grip and hammer and trigger modeled after the same revolver, a .38 Smith & Wesson Special Target barrel, with slot for changing front sights if desirable. A Sheard front sight will rest in the slot as they are the best revolver sights I have ever found. With the Smith & Wesson barrel and cylinder the revolver will have the same locking as the 1905 model Smith & Wesson.

The revolver will have a few improvements that are possible on a revolver of this kind and about which I will speak of at some other time. Mr. Cowan is sparing no pains on making it a good job, and is making it up in a shape as only a skilled workman as he is can make it. I am not writing this to start up the single-action swing-out cylinder revolver discussions again, but simply to let the revolver shooters know there is one being made to contain all of the best points of the different revolvers according to Mr. Cowan and my ideas. I promise to let you all see a cut of it in the *Outer's Book* when it is finished.



# CHOOSING A HEAVY CALIBER REVOLVER

By MAURICE H. DECKER

THE Colt's Single Action and New Service Army models are generally acknowledged to represent and embody all that is desirable and the best to be obtained in the line of a durable, effective, one-hand arm of large caliber. The conditions of the day and age have, however, so limited the need of a heavy belt weapon that even these are falling into disuse, and those smaller arms taking the .38 Smith & Wesson Special and .38 Colt Special cartridges are more extensively purchased, and are found to fulfill the requirements of the majority of gun "toters" who demand a weapon for other than target purposes. I do not wish to supplant the two models mentioned above in the favor of gun users, especially that old veteran, the S. A. Army, for which I have a due amount of admiration and respect; but occasionally there is felt the want of a powerful revolver of certain stopping power, somewhat larger than the .38 Special, but not as heavy as the .44-40 and .45 six-shooters. The shock of the recoil of these latter sizes, more noticeable when the black powder loads are used, is very offensive and unpleasant to the average shooter, develops the accuracy impairing habit of flinching and discourages frequent practice. In my efforts to select a powerful yet comfortable shooting arm, I used for some time the .45 S. A. Army with 5½-inch barrel, shooting the 28 grain powder charged cartridge. This was a satisfactory combination for the gun certainly developed stopping power at medium ranges with none of the excessive recoil of the regular 40 grain load. There is little difference in the value of the .44-40 and the .45 Colt's calibers to the frontiersman. Each has its advantages and disadvantages when compared to the other. I prefer the former because of its superior velocity and the fact of its being more readily obtainable in the hardware stores of even the smallest of towns; and recognize the superiority of the latter in accuracy, stopping power and the shells being regular factory loaded with smokeless powder and lead bullets. However, the .45 smokeless charge is somewhat of a disappointment in performance after the black powder loads have been used.

The Colt large frame revolvers have to me one marked disadvantage and undesirable feature. The only two practical lengths of barrel in which they can be obtained are of 5½ and 7½ inches, the former being too short for accurate shooting at long ranges and the latter too long for easy drawing and quick handling in close quarters. So, either falls short when wanted for all round use in all positions. The length of 6½ inches as the happy medium seemed to me just right and not favoring either the single or double action frontier models of Smith & Wesson make. I hit upon the

only available arm which seemed to correctly interpret, both in caliber and length of barrel my idea and conception of a practical large caliber revolver. This was the Smith & Wesson Military Model 1908, using both the .44 Russian and Special cartridges.

This gun is, of course, of double action type, which alone will disfavor it in the eyes of many, but apart from this the construction and design is excellent. True, the handle does not possess the unconventional "crook" of the S. A. Army, but it affords a firmer grip and is equally as desirable as the stock of the New Service. It is a well known fact that the quality of material and workmanship employed by Smith & Wesson in the manufacture of their revolvers is second to none, which fact can be verified at any time by a careful examination of anyone of their models.

The model 1908 has the advantage over the S. A. Army in its ejecting and loading system, ease of cleaning, more refined and smoother finish, and surpasses the New Service in the matters of convenience of carrying, trigger pull and balance. The Model 1908 Smith & Wesson is only equalled to my notion in the ease and speed of handling by the S. A. Army with 5½-inch barrel. The cartridges and loads which can be used in their new arm are many and varied. The .44 Special shell loaded with 26 grains of powder and a 246 grain bullet appeals to me very strongly as a comfortable shooting cartridge with certain knock-down powers. Its accuracy is unexcelled by even the .45 Colt's, both of which are able to give points in close shooting to the .38 and .44 Winchester shells. The penetration of the .44 Special being nearly eight inches of pine boards, is superior to any black powder cartridges adapted to revolvers in extensive use today. Its superiority over the heavier loaded .45, in this particular, is due to the difference in the shape of the two bullets. The old .44 Colt, over which this cartridge is a vast improvement, behaved very well and with effect in the frontier days of the West and I can see no possible reason why the .44 Special would not knock a man down as flat as would the .45 Colt, at a reasonable revolver range. Just why the .45 automatic pistol is designated by the makers as the most powerful small arm in existence, is a mystery to me, for there are no less than three cartridges used in revolvers (.45, .44-40 and .44 Special) which are superior to it in stopping power and energy.

There are other cartridges which can be used to advantage in this arm, among which are the .44 Smith & Wesson Russian, .44 Colt, .44 Bull Dog, and, I think, although I am not positive, the .44 Webley. In the occasion of an emergency



when the regular special cartridges could not be obtained, it is probable that at least one of these other sizes could be purchased which would remove the possibility of the arm from being rendered useless through lack of proper ammunition.

The only reason why this model will not become popular and in extensive use as a large caliber hunting arm, is its high cost which places it out

of the class of the Colt's New Service and S. A. Army guns in this particular. By the way, the illustration of the .44 Special cartridge in the Smith & Wesson catalogue is somewhat misleading and conveys a false impression in respect to the size of the cartridge and shape of the bullet, for they have taken a cut of the regular .44 W. C. F. and branded it as the .44 Special.

## GOOD COLOR IN CASE HARDENING

AT the request of a correspondent we reprint the following directions for securing good color in case hardening:

To obtain bright colors, the surface of the work must be perfectly clean and brightly polished; if it is greasy or poorly finished it will not take bright colors. To produce good colors with granulated raw bone, it must be thoroughly charred. An easy and economical method of doing this is to put it into iron boxes about 9x9x36 inches, covering them tightly, and placing them in the furnace at night, after the work has been withdrawn. The remnant of fire and heat remaining in the retort is sufficient to char the bone during the night. If, however, there is much fire left, it must be partially deadened, as the object to be attained is to char the bone without burning it. If smaller boxes are used they must be watched and removed from the furnace when the bone is charred. Where there is sufficient oven room, this sometimes can be arranged to be done during the day.

There is perhaps no more important operation connected with case-hardening than the proper packing of the work, which should be contained in a cast iron box of suitable size as, for instance, screws or similar work one-quarter to three-quarters of an inch should be placed in a box 4x4x8. In the bottom of the box should be placed a layer of charred bone, then the layer of the work to be hardened and colored, and so on, alternating with each until the box is filled to within one and one-half inches of the top. The remainder of the space should be filled with charred bone, the cover plate put on and the edges luted or plugged with clay. In packing, care should be taken to keep the work at least one-half inch from the sides and ends of the box, and to keep the pieces from coming into contact with each other.

After the packing is completed the boxes are ready to be placed in the furnace, where they should be heated to a good cherry red and held at that color from two to four hours. To obtain good colors the heat must be kept uniform; if the temperature is too hot there will be no color. A good cherry red heat must be maintained from the time the boxes are placed in the furnace until they are ready to dump. With very small work this time may be reduced somewhat; with very heavy work it may be increased. A little experiment is necessary to properly determine this period. The governing element is, that in order to obtain the

best results, it is necessary to employ a furnace that gives and maintains a good uniform heat.

While good colors can be obtained with hard water, soft water will give much better results. The bath should be arranged as follows: The water pipe should be brought up through the bottom of the barrel, reaching about half way to the top; the outlet should be placed about six inches from the bottom of the barrel, and the supply pipe connected with a pipe to an air pump, so that the air and water mix in their passage through the pipe and enter the barrel together. When the boxes are dumped, there should be a stream of water and air running into the barrel, and a sieve should be hung under the surface of the water, in which to dump the work. While the air pump is not absolutely necessary, its use is attended with more satisfactory results. Running water is necessary if large lots are to be dumped as the water must be kept cold, while small lots may safely be dumped into a bath of still water.

When the work is ready to be dumped, the boxes should be withdrawn from the furnace, held close to the surface of the water over the sieve, and emptied quickly. This operation requires the nicest care, in order that the air may not strike the iron before it reaches the water, for if this occurs, the work will assume a black or blue-black streaked color. When the dumping operation has been completed, the work next should be separated from the bone and boiled out in clean water. It then should be dried in sawdust and oiled over slightly while hot—ordinary machine oil will do—which will bring out the colors and keep it from tarnishing.

To secure colors ranging from light straw to deep blue, after the processes described have been faithfully observed, the pieces should be placed in a tumbling barrel until they are brought to a bright polish. After they are thoroughly polished, they should be placed in a cylinder and tumbled over a regular gas flame, until they are drawn to the desired color. Then they should be plunged in cold water, dried in sawdust and oiled slightly to avoid tarnishing. By using a regular gas blaze, and noting the exact time required, the process can be regulated to a nicety to produce any color desired from a light straw to a dark blue. If preferred, the parts may be placed in a wire screen cylinder, where the color changes may be seen, and the whole revolved over a slow fire. The fire must be free from gas or the parts will be stained.



## JOHN H. BARLOW'S RETIREMENT

NEWS of the retirement of John H. Barlow of New Haven, Conn., builder of reloading tools and founder of the Ideal Manufacturing Company; will be received with profound regret by every person who loves a gun. Mr. Barlow was pre-eminently the friend and mainstay of the gun crank and experimenter.

Many of the world's greatest marksmen of today, owe their success in great measure to the excellent reloading appliances which the genius and foresight of J. H. Barlow placed within their reach, making it possible for them to indulge in the luxury of a gun. Thousands of young men who were born with the shooting instinct, but without the means that would permit them to indulge in their favorite pastime, were enabled to do so through the timely assistance and wise council which was never denied them by Mr. Barlow. More than any other man of his time he recognized the brotherhood of the gun. In the last issue of the Ideal hand book ('The Shooters' Koran') Mr. Barlow says, "We know of no body of gentlemen that the word *fraternity* is applied to more fittingly than the lovers of firearms, whether it be the military gentleman, the target shooters, or the followers of the mighty nimrod, the fact that a gentleman is a shooter entitles him to the *right hand of fellowship*." The environment which shaped the character of Mr. Barlow also made him a student of human nature and an optimist, he early learned that the code of ethics for the gentleman and the sportsman has much in common. He early recognized the true democracy of sport, and lived up to it. This trait in his nature impelled him to personal contact and resultant friendships with his numerous patrons and was undeniably a strong factor in making his business a great success. It is the wish of Mr. Barlow's host of friends that he may for many years to come, mingle with them in their sports and enjoy the victories which his industry and genius made possible.

The Marlin Firearms Company of New Haven, will be a worthy successor to Mr. Barlow, and in a measure reconciles us to his retirement. The Marlin Company has always been noted for the very qualities of workmanship and attention to minute detail which made the Ideal Company indispensable to the shooting fraternity. We may therefore confidently expect that the work will be continued and kept in close touch with the rapidly changing conditions of modern gunnery.

John H. Barlow was born in England in 1846, came to this country when about one and one-half years of age. His father was a cotton weaver, so naturally he drifted to that work in this country. The cotton factories of fifty or sixty years ago in the United States as well as England, worked extremely long hours, and had in their employ very young children. At the age of eight years, Mr. Barlow went to work in the mill and continued

to do that work until during the Civil War when both he and his father became soldiers, the senior Barlow in the 30th U. S. Infantry and his son in the 14th U. S. Infantry (The regular service). From the age of eight until his enlistment in the Army, the number of hours worked per day in the cotton factory, varied from twelve to fourteen. Those early day experiences, as a child and youth, getting up at half past four o'clock in the stormy winter mornings, wading through the snow to be at the factory when the wheels started at five, then going out to breakfast at half past six and back again at seven, working until twelve o'clock, half hour at noon for dinner and back to the ceaseless grind until six and seven o'clock at night, caused his sympathies to be always found on the side of the working man, and when he became an employer, it was his desire and aim to treat all who were associated with him as he would like to be treated himself.

On his return from United States service as a soldier, he at once recognized the fact that he was without a trade whereby he might demand good and living wages, so he apprenticed himself to be a machinist. In the year 1870, he went to New Haven, Connecticut, and soon after was employed by the Winchester Repeating Arms Company and worked in their regular machine shop for a time; the opportunities presented to him by the variety of mechanical work done at that great institution were hungrily seized on by him. His ability to do, to take charge of and guide other operatives, was soon recognized by the Winchester Company, and he was given a contract which he continued to hold until he resigned from their service. It was there, he actually received the schooling and experience that enabled him to succeed in his own business afterwards.

In the year 1884 on leaving the Winchester Company, he immediately commenced to work for himself and started the manufacture of cartridge reloading implements under the now well-known name of The Ideal Mfg. Co. He had had no previous training for business; manufacturing for himself and disposing of what goods he was to make, was entirely different from what he had been used to. He found it indeed a difficult matter to get the trade to even look at his goods. Undaunted, however, he immediately commenced to advertise; he wrote all his own advertisements, the arrangements and the wording of which were unique and original, each showing the inventive mind even in this line. He soon found that the hardware and sporting goods trade would not handle his goods at all until they were compelled to do so and it was up to him to cultivate an acquaintance with the individual shooters. This he did entirely through correspondence. He at once commenced reading the magazines and papers that were devoted to shooting, fishing and outdoor sports, would write to these interested



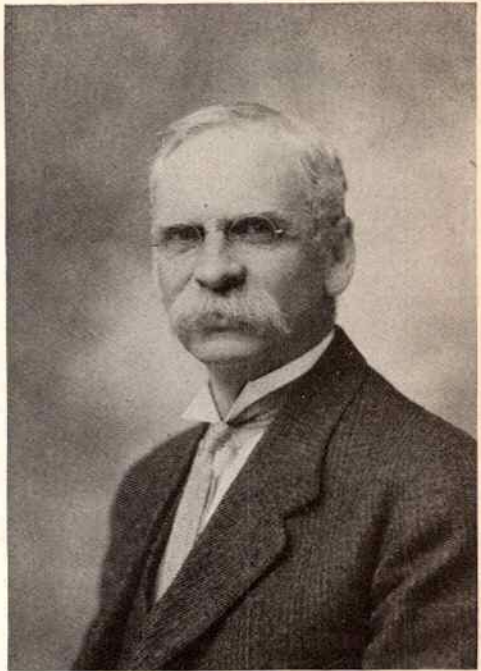
shooters and all correspondents whose names and addresses were found, and immediately commenced an interesting exchange of experiences that has continued throughout the entire twenty-six years of his business, which single feature has been the strength and support of it. It is safe to say that he has written more personal letters to the individual shooters in all parts of the world, aiding and advising them in various ways, than any other man. His experience and help has always been on tap for those who were in want of it, thus securing for him a very wide personal acquaintance and friendship among the shooters in general, who will miss him very much indeed.

During the transition from black powder to the use of the present high power smokeless powder, the Ideal Mfg. Co. has been the general instructor and adviser for the shooters.

Mr. Barlow is of a cheerful, optimistic nature. Makes friends and keeps them. Is liberal-minded and liberal-pocketed. Anyone with a pitiful tale is never turned away, the hungry tramp always gets a bite and a sup at the door of his house.

His business methods were of the old school, or as he puts it "No School." All bills were paid Thursday of each week, he never in his life paid a bill with a note, extended but little credit, believing that cash payments by him and by those who dealt with him, was the best form of "credit." During the entire twenty-six years of his business under the name of the Ideal Manufacturing Company, he states that he never lost \$200 in bad debts.

Religiously, he belongs to no sect, believes all are trying to do a good work, contributes according to his means whenever called upon. Politically, he is independent, believes in the rule of the people, in the initiative and referendum, believes that the United States senators should be elected by the people and that the United States should have as good a Parcels Post system, internal and international, as any country in the world. Fraternally, is a member of the Grand Army and is a pensioner for services rendered during the war. Has taken several degrees in the Masonic Orders, belongs to the A. O. U. W., New England Order of Protection, and believes in the home life rather than the Club. His family consists of three daughters, all of whom are graduates of Smith College, and are artistically and musically in-



JOHN H. BARLOW

clined, thus the home is made more attractive to him than the Club. In the city, he stands for civic betterment, is a member of the Chamber of Commerce, of the Council of One Hundred, and of the Civic Federation of the City of New Haven. He is entirely human, a good citizen, a good neighbor, a good father and lastly a good fellow, and his many friends in the hardware and sporting goods trade and the shooting fraternity in general, will miss his kindly letters and advice. They, however, will be pleased to learn that he has retired in good health, and hope that he may live long to enjoy the fruits of his labor which he has so well earned.





## A CLASSY .22 CALIBER RIFLE

IT IS to be expected as a matter of course that a new firearm entering the field in competition for public favor in this progressive and inventive age, must necessarily possess extraordinary merit, or some distinguishing principle of mechanism that will recommend it to a people as well informed on the subject of light caliber arms as Americans are known to be. It requires something more than sonorous high sounding names to catch the ear and hold the attention of discriminating shooting men who are themselves conversant with every detail of gun making, from raw material to ballistic performance and who eagerly detect and criticise every new arm as soon as it appears. When a company like the Remington heralds the coming of a new gun it is an event in the shooting world that may not be overlooked. We know beforehand that the Remington Company's established standards for material, workmanship and finish will eliminate these qualities forever as topics for adverse criticism. In weapons of any type, the product of the Remington armory, only new mechanical features or devices unfamiliar to the craft may remain legitimate subjects

operating a hand action is as convenient or so well adapted to small caliber repeaters. In speed it is scarcely exceeded by the automatic types and it has the advantage of being positive and reliable in action while permitting the utmost simplicity of breech closing mechanism. The new arm is hammerless, leverless and to outward appearance, boltless. From its shapely butt stock to daintily tapered muzzle there is not a single projection or unsightly angle to offend the eye or mar the exquisite beauty of outline; even the receiver and slide action handle are modeled to conform to the general symmetry of the arm. Where barrel and receiver meet the joint is nearly flush, thus giving a practically uninterrupted sighting radius from grip to front sight. The receiver is made with but a single opening on the right side, through which the empty shells are ejected, and which is securely closed by the solid steel breech block when the action is locked for firing, thus preventing all possibility of accident to the shooter or bystanders from blowbacks or defective cartridges. When the chamber is loaded and the action closed, the breech block is wedged snugly against the



THE REMINGTON "STANDARD" REPEATER

for expert censorship. The boldest critic would naturally hesitate before pitting his individual knowledge against eighty-four years of cumulative gun-lore for that is just what is represented in the new .22 caliber repeating rifle which the Remington people have recently placed within easy reach of the shooting fraternity. Nothing of merit that nearly a century of experience in high class gun building could know or suggest has been omitted in the new rifle. Veteran shooters who for fifty years and over have used and are familiar with the various models produced by this world-famous armory will at once note in their latest model, those distinguishing features which were characteristic of the original Remington arms, and which still retained gives them their unmistakable individuality. The latest addition to the long list of Remington successes, although but a .22 caliber rifle, perpetuates the graceful lines and admirable proportions which since 1816 have made the Remington arms in any type, favorites with the marksmen of every country. In adopting the sliding forend or trombone system for their new arm, the Remington Company has shown good judgment; time has proved that no other method of

square end of the barrel; a recoil shoulder cut in the top of the receiver engages a locking lug milled from hardened steel nearly the entire width of the breech block; the rim of the shell is countersunk into the face of the breech block as in high power bolt action rifles, and there is no extractor, or other slots, cut in the end of the barrel to weaken the chamber and cause soft or thin copper shells to expand and stick or burst and blow back into the mechanism. The extreme simplicity of the new Remington permits a compactness and solidity of parts with proportions that will at once appeal to the mechanical critic. The walls and top of the receiver are massive, and the breech bolt and hammer which are the principal working parts, are made to occupy all the space so that there is no lost motion and no deep grooves to weaken the arm structurally. This compactness of fitting renders it impossible for any of the working parts to get out of line. A neat and most effective safety is placed in the guard just behind the trigger, where it is convenient to the thumb and trigger finger when the hand is on the grip in shooting position, the position of the safety may be unmistakably ascertained at any time by sight or touch.



The arm is made in three grades "No. 1 Standard," "No. 2 Gallery Special" and "No. 3 Target." The Standard Grade has a neat walnut stock, shot gun butt, straight grip, rubber butt plate, and measures 38 inches over all. The stock is 13½ inches long, with a drop of 2½ at the heel and 1½ at the comb. The barrel is 22 inches long, is rifled with a 16-inch twist, and is chambered to take without any adjustment .22 short, long and long rifle cartridges. The magazine of the Standard will hold fourteen shorts, eleven long or ten long rifle cartridges. The Gallery Special is made with rifle butt stock, pistol grip, steel butt plate, 24-inch octagon barrel, and is chambered for .22

and withdraw inner tube until loading port is open; the cartridges can then be dropped into the magazine. The magazine can be emptied by withdrawing the inner tube and allowing the cartridges to drop out; it will never be necessary to pump the cartridges through the action to empty the magazine. The action may be worked and the chamber loaded by pushing up the front end of the carrier, which is exposed to view just in front of the guard, at the same time starting the backward movement of the slide handle; move the slide handle backward and forward smartly which will carry a cartridge into the chamber and lock the action ready for firing. In this position the



REMINGTON "GALLERY" .22 REPEATER

short cartridges only, of which it holds fifteen. This rifle weighs five and one half pounds. The No. 3 Target grade is identical with the Gallery Special, except that it has a straight grip, is made to take the three lengths of cartridge like the No. 1 Standard, the magazine will hold fifteen .22 short, twelve long or eleven long rifle cartridges. Some special features of the new Remington which will be quickly noted by shooters who are interested in the mechanical excellence of their arms, are the spiral hammer spring, practically unbreakable; the strong steel bushing  $\frac{1}{8}$  of an inch in diameter which forms a pivot for the hammer and carrier; which bushing also supplies a hole through which the assembling screw passes; the walls of the receiver although fully an eighth of an inch thick and ample for any purpose, are

breech block is rigidly locked to the recoil shoulder in the solid top of the receiver by the action bar which in turn is locked in its forward position by the carrier. This double lock, together with the broad locking surfaces, of hardened steel, prevents looseness caused by wear, a fault common to actions having narrow contact surfaces. If while manipulating the action, the trigger should inadvertently be held back, the arm can not be fired as the action will not close until the trigger is released. An additional measure adopted for safety is that the arm may be freely manipulated while the trigger is locked; it is to careless manipulation while the mind is preoccupied that most accidents with firearms are chargeable, and any appliance that makes for greater security without complication is to be commended.



REMINGTON "TARGET" .22 REPEATER

further reinforced by steel bushings with collars forming bosses against which the milled steel assembling screw exerts a strain, completing an assembling system the strongest yet devised and one that will not bind and cannot work loose. The rifles having 24-inch barrels when taken apart will pack in a suitcase 28 inches long. All of the working parts are attached to the receiver or guard so that when the arm is taken down there is no small parts to drop out and get lost. Every part that may require cleaning is easily accessible without the use of tools, and by removing the breech block the barrel may be wiped and examined from the breech. To load the magazine, press in magazine lever at front end of magazine,

"The No. 1 Standard" grade .22 caliber Remington, weighing but 4½ pounds, with its beautiful clean lines and perfect balance, is singularly adapted to the use of ladies and those of slender build, and to the needs of the trick and snap shot, or anyone requiring a light, quick repeating arm. "The No. 2 Gallery Special," with its convenient method of loading, the large number of shots in the magazine, and the additional total weight which is an aid to steadiness in aiming, makes it a most desirable arm for gallery use. "The No. 3 Target," with its straight rifle stock and clean beautiful lines, is a very attractive arm adapted to any use for which a .22 caliber arm is designed.



The three styles of the Remington .22 caliber are drilled for equipment with the Lyman or Marble combination rear sights. These sights add much to the shooting value of any arm without detracting from their appearance.

The strong, graceful outlines, the symmetrical proportions and the absence of unsightly openings, levers or protruding points, makes this model exceptionally favored for the purpose of elaborate ornamentation. To those who have a love for

the beautiful in firearms, the inherent beauty as well as the durability and wearing qualities of the Remington model No. 12, offers special temptations in its adaptability to elaborate ornamentation. The Remington is rapidly making its way into the affections of nature lovers and the shooting fraternity everywhere. It is certainly a classy little arm, and the Remington Company deserve the credit which the performance of the little beauty will surely bring them.

## THE INDOOR REVOLVER CHAMPIONSHIP

With the remarkable score of 461 points (forty-eight out of a possible fifty bulls-eyes, as shown

by accompanying cut), Oscar L. Olson, of Duluth, Minnesota, has been declared winner of the annual Indoor Championship Match of the United States Revolver Association.

The conditions called for fifty consecutive shots with revolvers at twenty yards, on the standard American target with inner or ring counting ten points 1.13 inches diameter.

This match is open to everybody and is shot on ranges of clubs affiliated with the Association, on official targets and under the auspices of a representative of the Association.

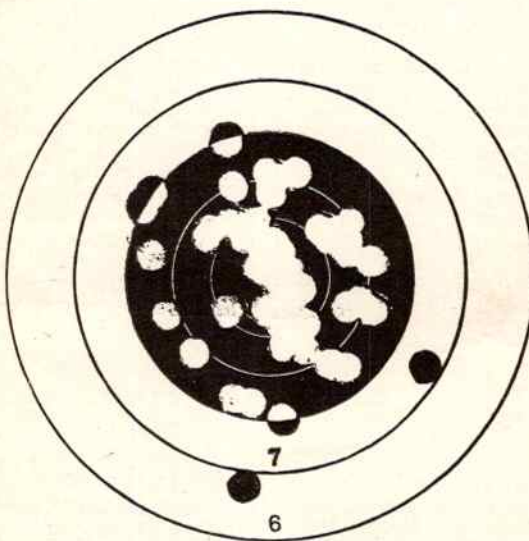
Mr. Olson has been known as an expert revolver shot for many years, and was high man on the fifteen-man American team which defeated the

French revolver team in the International Shoot in 1903, his score being 554 points or fifty-seven out of sixty bulls-eyes at fifty yards.

In his remarkable shooting this year Mr. Olson used a caliber .38 Colt Officers' Model revolver.

The several state champions were: Arizona, L. O. Howard; Washington, D. C., Capt. S. Ferree; Kentucky, Sidney Smith; Maine, L. R. Hatch; Minnesota, Oscar L. Olson; New Jersey, T. P. Nichols; Oregon, George H. Wilson; Rhode Island, E. C. Parkhurst; California, R. P. Prentys; Illinois,

W. H. Whigam; Louisiana, J. H. Wessels; Massachusetts, E. A. Taylor; Missouri, Dr. M. R. Moore; New York, P. Hanford; Pennsylvania, George Hugh Smith; Utah, Capt. A. McNab; Washington, Frank Fromm.





# ROOSEVELT'S FAVORITE BIG GAME RIFLE

By EDWARD C. CROSSMAN

THOSE who have followed the series of articles by Col. Roosevelt, published in Scribner's Magazine, have probably noticed the hunter's frequent reference to his Holland double-barreled rifle and his enthusiastic praise of the weapon as a hard hitting, reliable arm.

He states, referring to the battery of himself and his son:—

"My rifles were an army Springfield, .30 caliber, stocked and sighted to suit myself; a Winchester .405 and a double barreled 500-450 Holland, a beautiful weapon, presented to me by some English friends. Kermit's battery was of the same type, except that instead of a Springfield he had another Winchester shooting the army ammunition and his double barrel was a Rigby."\*

In the December Scribner he states, telling of the shooting of his first rhinoceros:—

"I pushed forward the safety of the double barrel Holland that I was to use for the first time on big game. As I stepped to one side of the bush to get a clear aim, with Slatter following, the rhino saw me and jumped to his feet with the agility of a polo pony. As he rose I put in the right barrel, the bullet going through both lungs. At the same moment he reeled, the blood spurting from his nostrils and galloped full on us. Before he could get quite all the way round in his headlong rush to reach us, I struck him with my left hand barrel, the bullet entering between the neck and shoulder and piercing the heart."

"——— My Holland, than which I do not believe a better weapon for heavy game could be found ———"

In the account of the killing of the second rhino, printed in Scribner's magazine he says:—

"The terrific striking force of the heavy gun told at once and the rhino whirled and staggered back into the thicket, where we heard him fall."

And again — "For heavy game like rhinos and buffalo I found that for me personally, the Holland was unquestionably the proper weapon."

The Colonel states in one of his articles that while on heavy game the Winchester bullets broke up on the bones, the Holland bullets drove through, smashing things before them.

The rhinoceros has had the reputation of being a very hard-to-kill, tough-skinned, dangerous beast. It has been told for generations that the ordinary lead bullet would not penetrate the skin along the breast of the beast, owing to the thickness of the hide and its extraordinary toughness. Yet we find Roosevelt dropping them time and again to a couple of shots from his Holland and we must come to the conclusion that his Holland is some gun.

Holland and Rigby are names that have a rather unfamiliar sound to the average American rifle crank. "500-450" means but little as an indication of the power of the cartridge used in Roose-

velt's Holland. Many readers of the story of the Colonel's hunt have set down a .500-450 cartridge as being first cousin to our own .45-70, or maybe a little bigger round, as one rifleman of my acquaintance, guessed it.

It may be interesting to the Outer's Book cranks to look into these double rifles of the Roosevelt's particularly in view of the scores of hunters, already planning to follow the African game trails, blazed for the first time—and plainly besides—by an American hunter.

The Holland & Holland rifle of Roosevelt was given to him, as the readers of the articles know, by about fifty well known English game lovers, writers and titled people. Among them was Lord Brassey, owner of the famous yacht "Sunbeam," made famous in the owner's book on his trip about the world; Selous, famous big game hunter; the Duchess of Bedford, a noted English sportswoman—to mention them all would use up the space set aside for this article.

The rifle arrived before Roosevelt terminated his term of office as President, being given to him on the donors hearing of his proposed trip to Africa.

One of the most famous gun making firms in England, as well as one of the most conservative, Holland & Holland, 98 New Bond St., London, was selected to build this rifle and it is evident that they succeeded in giving satisfaction at least in the shooting of the weapon.

The cost of the rifle is not given, but Holland & Holland will not make a double gun of the bore of this weapon for less than \$250.00, ranging from that up to \$500.00 for their "De Luxe" grade. It is evident therefore that if Teddy had the misfortune to have his rifle stepped upon by one of the four-legged locomotives that he tackled, it would cost him a shot sack of simoleons to replace it. His rifle cost around \$500.00, this much we know.

The cartridge used is the .500-450, originally turned out for black powder but at present one of the modern high velocity Cordite loads. It is a slightly tapered shell, with a bottle neck and is  $3\frac{1}{4}$  inches long, over the case alone. For comparison the .45-70 is  $2\frac{1}{4}$  inches long and the .405 Winchester, a very long cartridge, is  $2\frac{1}{4}$  inches long, measuring the case alone. The charge used in this mild affair is 75 grains of Cordite powder, behind a bullet, either soft point or full nickel jacket, weighing 480 grains! The muzzle velocity is 2175 foot-seconds and the muzzle energy 5037 foot-pounds. We begin to have an inkling of why the rhinoceros, hit by a bullet from this rifle, decided to lie down and die.

For comparison, the charge for the .303 British cartridge which is about the same as our own .30-40, is but 31 grains of Cordite. The striking power of our .30-40 is about 1960 foot-pounds and the

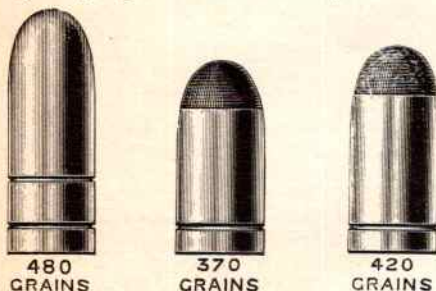
\* "From Game Trails by Theodore Roosevelt," published in Scribner's Magazine copyright 1909-1910 by Charles Scribner's Sons



## The Outer's Book

striking power of the .405 Winchester is but 3,000 foot-pounds.

Other modifications of this cartridge are bullets of 420 grains and others of 370 grains, these of course for smaller game. Still another departure is the "velopex" bullet, weighing 365 grains. This is made with a hole in the point in which is set a wedge shaped piece of steel. On impact the steel



THREE HOLLAND BULLETS

is driven back and the bullet expanded forthwith. The principle is much the same as the well-known Hoxie bullet. The rifle is not the most powerful made, by about 4,000 pounds. The .600 bore Cordite is the worst weapon made on this globe for striking power and is much used in Africa but evidently Roosevelt's friends were true friends and they did not select this cannon. The latter arm takes a bullet weighing 900 grains—.405 Winchester weighs 300 grains—drives it at a velocity of 2050 foot-seconds and shoots 100 grains of Cordite. Striking force is 8700 foot-pounds. Recoil is 100 pounds. The .405 for comparison is 28 pounds and we consider that a hard kicking rifle, so much so that many men refuse to use it through their dislike to being kicked about.

Another cartridge that has Teddy's backed off the map for playfulness is the .577 bore, using 100 grains of Cordite, a 750 grain bullet and delivering 6,994 foot-pounds when the bullet lands close to the rifle. The .500 bore is also more savage, with 570 grain bullet, 80 grains of Cordite, 2150 foot-seconds velocity and a striking energy of 5884 foot-pounds. The .476 and .475 cartridges also slightly outclass the .450 used by Roosevelt. All of the cartridges mentioned are of course modern, Cordite, high velocity loads, the black powder 4 and 8 bore not being touched on.

But the matter of cartridges for big game is as much of a case of one's personal choice in England as it is here. Some elephant hunters of the black powder days used a 4 bore rifle with 3-ounce bullet and 15 drams black powder. Others used the .450 black powder and also landed the mutton. The .600 bore Cordite rifle is almost impossible to lug around, weighing 16½ pounds and being of course quite hard to use quickly.

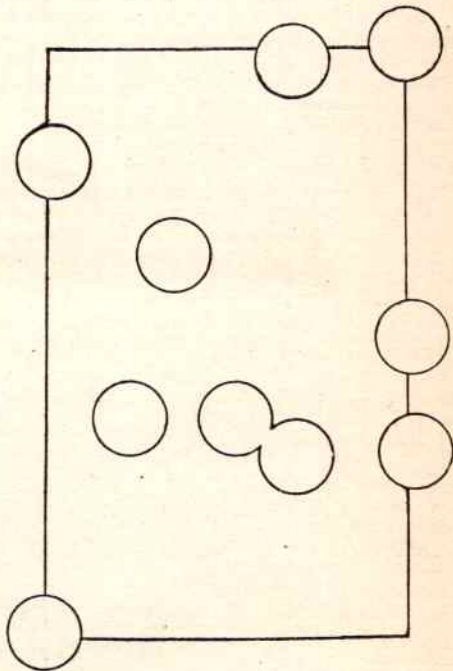
The Roosevelt rifle weighed between ten and eleven pounds, very heavy according to American standards but rather light, from those of African big game hunters.

Double rifles have been the standard for hunting dangerous game since the first elephant charged a venturesome Englishman and he found that two shots beat one all to thunder. Up to quite recently,

these double rifles were used in practically every form of game shooting and they were even made up for light cartridges for rabbit and rook shooting. Improvements in single shot actions and in magazine rifles are steadily putting the double rifle out of the running until Jeffrey & Co., exponents of the new school of gunmaking in England, write that the magazine rifle—Mannlicher and Mauser—is putting the old double rifle and the falling block out of the running except for the largest game, elephant, rhino and buffalo, where a quick second shot is worth a dozen in a magazine and where the necessary weight is not a drawback but a benefit as offsetting the terrific pound of the rifle.

The old big game rifles were 4, 8 and 12 bore black powder rifles, using tremendous charges of black powder and bullets up to 1-5 pound in weight. A 4 bore of the old days weighed 20 pounds. These are of course displaced by modern Cordite rifles, such as that of Roosevelt, for big game, while for anything under the size of a rhino, the magazine rifle is displacing those of other types.

The objections to the double rifle are many. The barrels expand away from each other, making the shots diverge from the line of sight. The barrels are set slightly converging to offset this and the bullets would cross at about 50 yards were it not for this expanding. To adjust two rifles barrels so the bullets will strike a common center at say 200 yards, is a process, troublesome, long and expensive, with no certainty of success at the end unless the rifle is built by a very experienced maker. For this reason the cost of these rifles is almost prohibitive. Jeffrey turns out the cheapest one the writer knows of, selling for \$240.00 in the hammerless type for the .600 bore Cordite and for \$125.00 in the less powerful bores.



A TARGET AT 100 YARDS



The sportsman must pay for two barrels, in addition to this long process of making two barrels shoot to a common center, and to make the rifle light enough, in calibers where the weight is not needed to offset recoil, the barrels are robbed, leaving them so light as to invite dents from chance blows.

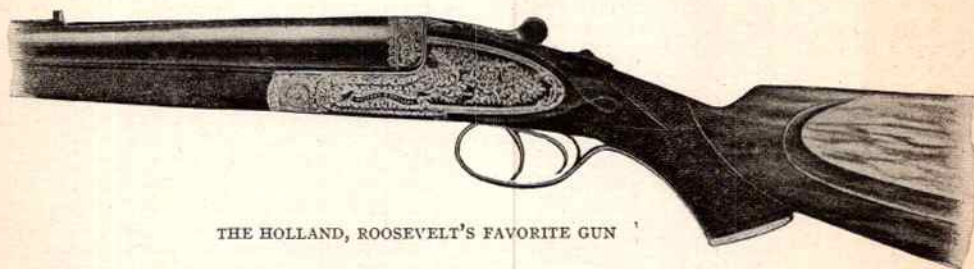
On the other hand the double rifle balances and shoots like a fine double shotgun, with the quick second shot of the fine double gun. Most of the Standard English makers, Holland & Holland, Westley Richards, Jeffrey & Co., Purdey; Lancaster and Greener, fit their rifles with single triggers and ejectors, making them equivalent at

from our own and they are willing to stint themselves to obtain a reliable arm.

It is perhaps a joke that Roosevelt has a rifle that cannot be imported into India, being one of the taboo .450 bores, that with the .303 cannot be taken into India by a sportsman, for military reasons.

To take a recoil of the weight of such rifles as Roosevelt's, heavy grips and care in the selection of stocks is necessary. Holland & Holland also run a heavy steel strap over the grip of the rifle to help hold against the terrific strain at that point.

The Holland rifles are fitted with intercepting sears to prevent an accidental discharge of the



THE HOLLAND, ROOSEVELT'S FAVORITE GUN

the breech end to a fine double shotgun, with the same quick handling.

In appearance the rifles look like handsome double shotguns, the makers using either the box or the side-plate pattern of lock as on the shotgun. The sights are usually a flat bar with shallow "U" or "V", with other folding leaves arranged along the barrel, to be thrown up into place if a quick change in range is desired. The front sight is usually a white bead, ivory or German silver.

To take the terrific jar of the heavy rifles when fired, most of the English makers fit their locks with locking sears to prevent the second barrel from jarring off from the discharge of the first.

The advantage of a rifle with the easily caught line of sight of the double hammerless gun, with

second barrel. They are fitted with ejectors. The newer model of Holland rifles are fitted with patent detachable side plate locks, following the style set by Westley Richards with the box frame lock. With the Holland the locks are detachable by a turn of a bolt running through both plates and with a countersunk handle set in the plate, by which to turn it.

Most of these rifles are fitted with recesses in the butt or in the grip for spare parts, sights, strikers, etc. In all other details the rifles of such makers as Holland & Holland provide for any eventuality that may come up, that that gun-making genius can guard against.

Let anyone get the idea that Holland & Holland suffered from stage fright in making up a rifle for



ejectors and single trigger can be appreciated by the shotgun lover, who has clawed around a short-stocked, ill-fitting American repeater in the endeavor to fire a quick second shot at moving game.

That the English makers cater to a trade that has money and is willing to pay for fine work, is one reason for their high prices for their rifles, it not being a paying proposition to turn out cheap rifles when there is no demand for them. Most of the purchasers of big game English rifles are those wealthy enough to go half around the world in search of big game and even in the case of the man needing a fine rifle but not wealthy, such as army officers, sent abroad, the ideas of English sportsmen as to the way to make up rifles differs

so distinguished a personage as our own Teddy, it might be well to add here a name that for mere impressiveness in sound, regardless of the personality of its wearer, has Teddy backed off the map. If a gun maker can make a rifle and turn out a fine job for a man with such a name and with such titles, no mere President can buffalo him.

Charles Lancaster prints a testimonial from this:—

"Sir Bir Sham Sher Jung Rana Badahur, G. C. S. I., etc., etc., Prime Minister and Commander-in-Chief, Nepal."

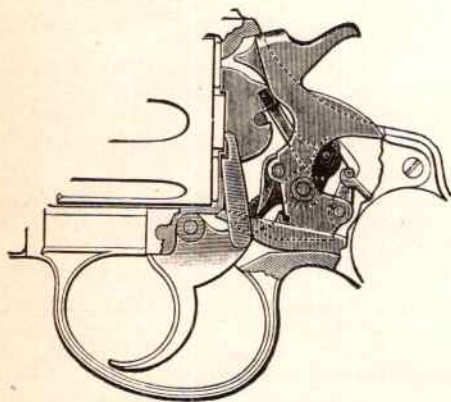
No, the printer that set this up was not a drink-ing man.



## MORE ABOUT THE NEW COLT

ONE of the most agreeable tasks that has been assigned to the gun editor since his accession to the throne is a commission from the editor-in-chief to examine and make a report on the new Colt .22 caliber revolver that has just been perfected and placed on sale. The only condition imposed was, "Give the public the facts as you find them." Therefore what is published here is a statement of facts wholly uncolored by personal preference.

For the first time since the invention of fixed metallic ammunition we can say truthfully that we have a really practical repeating pistol for general use, that will take, and handle successfully, a .22 caliber rim fire cartridge. The cartridge selected by the Colt people for their new arm, is the .22 Winchester rim fire, the largest and most powerful rim fire cartridge made in .22 caliber and the one which in repeated and exhaustive tests gave the most satisfactory performance. Many



THE COLT SAFETY DEVICE

of us would have preferred the new pistol chambered to take the cheap and popular .22 long rifle cartridge or have had the chambers made without a shoulder so that .22 short, long, long rifle, extra long and the various makes of armory cartridges could be used in the one gun; others favored the .22 Winchester Automatic cartridge, while a small minority asked for the new arm in .25 caliber, either rim or center fire. It was characteristic of the Colt Company to finally settle on the cartridge that had given the best results in their long series of tests, and that is why the .22 Winchester rim fire was chosen. Only those who have been engaged in the manufacture of firearms or have made them a study can know or realize the difficulties to be encountered in the bringing out of a new arm. Perhaps at no time since the invention of powder-burning arms has so many obstacles

been met with in the attempt to select a cartridge in every way suitable for a specified type of arm. We must not lose sight of the fact that most of the revolvers now in use and the shells adapted to them were designed for black powder which notwithstanding its disagreeable propensity for fouling, is accurate, uniform in chamber pressure developed, and dependable in performance. With the single exception of the Winchester .22 caliber automatic, we haven't a single .22 caliber rim fire shell originally designed for smokeless powder, available for the use of American sportsmen at the present time; in most instances the rim fire shells loaded with smokeless powder by the different cartridge makers are exactly the same as those loaded with black powder. The copper sheet from which the shell is drawn is of the same weight; the holding capacity has not been changed; the primer space does not vary and the weight, shape and temper of the bullet is identical with the rim-fire shells produced thirty years ago. When used in rifles or single shot pistols that breech up closely and in which the head as well as the body of the shell is snugly confined, the faults which may develop when used in the revolver with smokeless loads, may not appear. There is no .22 caliber rim fire ammunition loaded with smokeless powder that can be depended on to always give satisfactory results in a revolver. This condition of things is in a measure due to the fact that heretofore we have had no really practical arm of the revolver type, the use of which would show the defects of our rim fire cartridges.

One of the defects alluded to is imperfect combustion, due to weak or slow priming. Accuracy need not be looked for with ammunition that leaves unburned grains of powder in the chambers and barrel. This condition may easily be remedied as was done in the case of center fire cartridges. Another objection to the use of smokeless rim fire cartridges in revolvers is that owing to variations in the thickness and temper of the shell metal, and extremes of chamber pressure some batches of shells will bulge backward, filling the space between the end of cylinder and recoil shoulder, causing a jam and rendering ejection difficult; this condition is not constant, which proves that it is wholly the fault of the ammunition and can be overcome. The superior fitting and workmanship of the Colt revolvers renders them less liable to trouble from this source than the cheaper grades. The time has come when our leading cartridge makers must get together and standardize their output of .22 caliber ammunition. The remarkable improvement made in military and sporting ammunition in the past two years proves what is possible in the way of improving cartridges for the small bore. During the year 1909, four of the leading American manufacturers furnished over twelve million cartridges, caliber .22 short, for the use of the government, exclusive of what





ANOTHER VIEW OF THE NEW COLT, SHOWING ITS FINE LINES TO BETTER ADVANTAGE

were consumed by civilian shooters. Surely this ought to be an incentive to greater perfection in our rim fire .22 caliber ammunition. We need a better shaped bullet of slightly harder material, with a more perfect base, one that will seat friction tight in the shell and requires no lubricant. The shell should be made of heavier and harder material, so that they will not bulge or stretch under the force of the strong primer required to thoroughly ignite the slow-burning, soft-grained brands of smokeless powder now so generally used in loading the .22 caliber rim fire shells. A new powder has recently been tried in .22 caliber rifles and judging from results already obtained much may be expected from it. In watching the performance of rim fire .22 cartridges loaded with soft-grained smokeless powder, the writer has noticed that the powder will sometimes be compressed into a wad against the base of the bullet, by the sudden action of the fulminate and pass through the barrel in that condition. When this occurs, although the head of the shell may be bulged or burst under the suddenly exerted force of the priming, neither uniform accuracy, range or penetration may be expected, but the weapon is in no way to blame. The writer is of the opinion that the new .22 Colt revolver will be instrumental in bringing about needed and immediate improvements in our .22 caliber ammunition. The new arm is essentially the arm of the experimenter and investigator. It is possible to get primed shells, and bullets of different weights and shapes, grooved and greaseless, from the makers, and with a dozen brands of powder, foreign and domestic, to experiment with, some persevering brother will develop a perfect smokeless load. Meanwhile don't get the impression that you cannot get as good or better results with the regular output of ammunition in the .22 Colt as with their weapons of larger caliber. For those who have not seen the latest thing in firearms, and the one which we predict will have a greater sale than the famous single action Colt, we publish this cut and description. To be brief the new .22 caliber in

general outline and appearance resembles the .38 Colt Officers' Model Target, the most perfectly proportioned firearm in the world, but it weighs nearly twelve ounces less. The pistol is  $10\frac{1}{2}$  inches over all and has a 6-inch barrel. The rear sight is a low, narrow block, neatly dovetailed into the frame and is adjustable for windage; the front sight blade is interchangeable, and is secured by a single transverse screw through a strong steel sight-base brazed to the barrel. The handle is the full Colt grip, proportioned to the size and weight of the arm, with handsome black rubber stocks tastefully figured and checked. The frame measures  $\frac{5}{8}$  of an inch thick at a point just ahead of the full rubber stock which fills the average hand and prevents wobble while swinging the arm laterally. A feature of the arm that will be quickly noted by the mechanical critic is the manner in which the barrel is stepped into the frame; a deep shoulder is turned on the barrel which, when the barrel is threaded and screwed home, comes squarely up against the solid frame, thus ensuring perfect alignment of the barrel with the frame and prevents all possibility of working loose. The barrel tapers slightly from shoulder to muzzle; it calipers half an inch outside diameter at the muzzle, is heavy enough to give assurance of steady holding and is perfectly proportioned to the frame, cylinder and handle. The cylinder holds six shots. Some of the more zealous petitioners for the new .22 suggested making it a 7 or 8 shot weapon; the writer was one of these, but after seeing the equal distribution of metal around the chambers, suggesting strength, solidity, and proportion as well as safety to the shooter, he is sure most of us would be loth to exchange the features named for the doubtful advantage of a couple of extra shots. The chamber walls of the .45 Single Action Colt are less than half as thick as those of the new .22. When it is remembered that the Colt arms are fully guaranteed for use with smokeless and other powders in standard factory loads, one may form some idea of the strength of the new arm. The outside diameter



of the cylinder which is the absolute width of the arm, is one and one-quarter inches, scarcely enough to make a bulge in the pocket of a dress suit. Like all the double action revolvers made by the Colt Company the bolt recesses in the cylinder are located between the chambers and close to the rear where they cannot in any way reduce its great natural strength. The cylinder can be actuated by the trigger as a double action or by the hammer as a single action; it revolves to the right with the purchase of the actuating mechanism against the solid frame which ensures perfect alignment of cylinder and barrel at all times before the arm can be fired. There is absolutely no play or lost motion to the cylinder in any direction. The Colt positive lock is a feature of the new gun; located entirely within the frame, it works automatically and therefore cannot be forgotten. The arm is safe at all times. To be fired the trigger must be pulled intentionally. The safety appliance requires no shifting of safety levers, in awkward positions, no special method of grasping the

handle, no extra mental effort on the part of the shooter, and there are no push buttons or other projecting points to catch in the clothing or holster. The little coterie of enthusiasts who were untiring in their efforts to get the new arm are surely entitled to the thanks of the shooting fraternity. Some of these incurred the expense of converting larger calibers to the .22 to prove their convictions; others assisted with eloquent and logical articles to prove the utility of such an arm, and still others placed their orders for the new gun in advance as proof of their faith in the .22 revolver and its manufacturer. The result is we have a practical arm adapted to almost every kind of shooting, perfectly balanced and proportioned, of proved mechanical principle and superb finish. It is the writer's prophecy, based on long experience and observation among masters of the weapon, that once you have felt the fascination of practice at flying targets with a .22 caliber pistol you will never be divorced from your Colt.

## ANSWERS TO CORRESPONDENTS

### AUTOMATIC PISTOLS

EDITOR GUN DEPARTMENT: What would be a good caliber and make of an automatic pistol for general purposes, say target practice and hunting? Can the cylinder of the new service Colt revolver be readily taken off for cleaning purposes? I am not fully acquainted with this arm yet. What is the range and penetration of the .44 Russian cartridge? I am the owner of a Harrington & Richardson .22 caliber revolver, which I have had about a year, and up to a few weeks ago, have used nothing in it but the .22 short smokeless. A few days ago I shot a few rounds of the .22 long smokeless in it. These gave excellent results, but on attempting to eject the empty shells, I found them stuck so hard and fast that I had to use some force in removing them. What is the cause of this? I am very much interested in the proposed new auto .22 caliber pistol. Yours very truly,  
W. J. ERICHSEN.

[My choice of an automatic pistol for general purposes would be a Colt .38 Military model with a six-inch barrel, or a Luger 9 mm. (.35 caliber). Both of these arms have passed the most exacting ordnance tests creditably.

There is but a trifling difference in the ballistic performance of the two arms. The Colt has a velocity of 1163 foot-seconds, and the Luger 1020.

The New Service Colt is easily dismounted for cleaning. The cylinder is removed by carefully turning out the crane lock screw, which will be found on the right side of the frame where its grooved head engages the crane lock. When the crane lock is removed, the cylinder may be taken out by pushing it to the left and drawing it forward.

The .44 Russian cartridge with the 256 grain bullet, has a penetration of seven and one-half,

$\frac{7}{8}$  pine boards, 50 feet from the muzzle of a revolver. It is extremely accurate and will group its shots well inside a circular bullseye 22 inches in diameter at 300 yards. There may be several reasons for the sticking of the empty .22 caliber smokeless shells in your revolver. If the shells chamber loosely in the cylinder, the pressure of the smokeless powder will expand them beyond their elastic limit, causing them to fill the chamber and wedge in the space between the end of the cylinder and backstop. It is possible that the shells you used were made of thinner or softer copper than standard. In this case, the remedy would be to try another lot, or make of shells.—R. A. K.]

### EITHER WILL DO

EDITOR GUN DEPARTMENT: I have read and studied every article in the Gun and Ammunition Department of the Outer's for about a year and had fully decided to purchase a .30 U. S. Army carbine, but the latest model of the Winchester Automatic, described in the March number of the Outer's looks good to me and it is a hard matter for me to choose between these two. Now I would like to know if you consider the automatic's action as positive as that of a hand functioned gun. Do you consider the automatic as reliable in hunting dangerous game? Yours very truly

H. E. RICHARDSON.

[I am pleased to note that you value the opinion of the Outer's Book on the important subject of selecting a reliable hunting arm. You could make no mistake if you were to decide on either of the arms mentioned. I have used the earlier models of the Winchester self-loader, the .32-35 and .351 calibers and have found them fully as



positive and reliable as any hand functioned arm. I am of the opinion that in the hands of a person not specially practiced in manipulation of lever or bolt action arms, the self-functioned arm would be the safer and more reliable weapon in a close or dangerous encounter. The Model 1910, .401 caliber, weighs 8½ pounds. Being designed exclusively for a hunting arm the .401 will not have the range of a military arm but it will have the essentials of a hunter's arm within hunting ranges, viz.: velocity, shocking power, and a withering speed of fire. Should you decide on the .30 caliber I would strongly recommend the Model 1895 Winchester taking the New Springfield cartridge. The Winchester Company is now equipping this cartridge with bullets adapted to the hunter's use.—R. A. K.]

## FOR BLURRED SIGHTS.

EDITOR GUN DEPARTMENT: Have just purchased a "Target" model .22 caliber Remington and intend to use it for glass ball shooting. I must be far sighted as the rear sight blurs, but when held away from shoulder, the difficulty is overcome. What do you think of the Daniels' Concentric (rear) sight? I find that in using shorts the gun seems to shoot a little to the left, but in using the regular long rifle the gun shoots accurately. Thanking you in advance, W. F. L.

[The trouble is caused by the rear sight of your rifle being too near the eye. The Daniels' Concentric sight is designed to overcome the blurring from this cause. Another remedy would be to lengthen the stock slightly. I believe a better method would be to use a Lyman or Marble rear combination peep sight with a large aperture.

As you intend to use your new Remington target .22 caliber for snap shooting, I would strongly recommend the rear peep sight for the work, and as a remedy for blurring. It is possible that a slight fouling at the chamber while using the short cartridge, is the cause of the arm shooting to the left.—R. A. K.]

## THE .22 SINGLE SHOT.

EDITOR GUN DEPARTMENT: I would like to ask some questions preliminary to the purchase of a good .22 caliber rifle. I know that the Winchester rifle in this caliber ejects the shell from the rifle. Is the Stevens' action (Model 44½) fitted with an ejector? As regards the action do you know of any points in favor of one or the other of the two makes? I saw the statement made, I think, by either Ashley, Haines or Pascal de Angelis, that an octagon barrel heats unevenly and causes erratic shooting. Is this true in the case of the .22 caliber—or in fact of any caliber? If it is not necessary I do not wish to have a rear sight or even a rear sight slot cut in the barrel. Can one learn to do as quick and accurate shooting with a Lyman tang sight as with ordinary open rear sights? Is there any danger of the take-down of either of these two makes shooting or working loose? Returning again to the action, is the hammer of the Stevens rifle cocked by the lever movement or must this be done as a separate movement?

I have neglected to state that all my questions have reference to the Winchester single shot rifle.

Yours very truly, H. J. SPORE.

[According to my experience, the points are all in favor of the Winchester single shot rifle. The Stevens people make excellent barrels, but their actions are not so durable. The Winchester material and workmanship is of the best, and their accuracy is unquestioned. I would advise you to select a round barrel. It is generally understood that being turned by machinery, there is more uniform distribution of metal around the bore, than with the octagon, which is draw filed by hand. The heating in the case of the .22 caliber would not cut much figure, but the corners of the octagon barrel will eventually wear bright, and radiate light, which is troublesome on bright days. When hunting on rainy days, or in dripping foliage, the water will lie on top of the octagon barrel, while it will run off the round. When one is using low sights that bring the line of sight close to the barrel, this is rather annoying. In the case of larger calibers and high power rifles that heat rapidly, the round barrel is selected in preference, by those who are wise. It is possible to do as rapid, and I believe more accurate shooting, with the Lyman or Marble rear combination peep sight, than with the open. Captain Hardy uses the peep exclusively. Eight of my rifles which I use for trick and fancy shooting, are equipped with ivory or gold bead front sight, and Lyman or Marble rear peep. My rifles are all made without the slot for rear barrel sight. To have a clean unbroken sighting plane, gives the rifle a much better appearance. The longer the distance between the sights, the more accurate will your shooting be. Both the Winchester and the Stevens rifles can be made to place the hammer at full or half cock, with the lever as desired. The Winchester is made to full cock, unless otherwise ordered. In rapid or snap shooting, it is my custom to use the large aperture, which being near the eye, gives a large field. The new Winchester single shot take-down, will not work loose. It is made in the heaviest calibers, and is reliable.—R. A. K.]

## FOR TARGET WORK.

EDITOR GUN DEPARTMENT: I am going to purchase a small, high power rifle for target work, shooting ducks, coyotes, etc. I shoot game at from 100 to 400 yards, and I am very particular in cleaning the barrel. I want a rifle that I can clean from the breech. It seems to me that I shall have to be contented with a single shot or a take-down if I purchase American guns, and I do not fancy either. Please tell me what your choice would be and oblige, Yours,

A CONSTANT READER.

[You seem to have been overlooked in the designing of American firearms. For the kind of shooting specified in your letter, I would recommend the 25-35-117 cartridge, as it has range, speed and energy. It has ample killing power for all small game, and a hunter armed with a repeating rifle and the 25-35 cartridge, need not hesitate to use it on deer or black bear. The Win-



chester Company makes a fine single shot arm to take this cartridge, and the Winchester, Savage, and Marlin all make repeaters in both solid and take-down frames. The Remington Company makes an automatic, and the Standard Company an automatic and a trombone action, or the two features combined in one arm. All Standard rifles may be cleaned from the breech when the slide action is drawn back. While the Standard is a take-down the system adopted is one that can not work loose, as the entire length of the receiver and frame are utilized as contact points. The take-down lock is located in a hole behind the guard. A slight pressure is all that is required to release the lock, which permits the frame and receiver to separate at once, and without the use of tools. Should you decide to purchase a bolt action rifle, I would suggest the .256 caliber Schoenauer-Mannlicher. I am of the opinion, however, that everything considered, the Standard would more nearly supply your needs than any other arm. There might be difficulty in getting foreign ammunition in your locality.—R. A. K.]

### A GOOD REVOLVER

EDITOR GUN DEPARTMENT: I wish to purchase one of the best revolvers I can get for general use, and will state that I am rather in favor of large caliber and single action. Your advice on this subject will be very much appreciated. It may be that I will shoot a good deal, and would like a revolver using ammunition that can be reloaded. I will want to use the arm at home for self protection, and would like one that I can carry in a shoulder holster or belt. Will use arm for shooting at moving objects and stationary targets. Do you consider the .44 Russian cartridge as satisfactory as the .44-40 or .45 Colts, or would you prefer the .38 S. & W. special cartridge. Have thought of purchasing a S. A. Colts, but am undecided as to whether to buy the S. A. Army or Bisley model. Do you think the 5½-inch barrel will be as satisfactory as the 7½-inch. Thanking you in advance.

Yours truly,

T. H. H.

[Your expressed preference for a single action revolver of large caliber limits you to a choice between the Colt Army and the Smith & Wesson .44 Single Action. Either of these arms taking the .44 Russian model cartridge would be well adapted to the work which you have outlined. The .44 Russian cartridge is one of the most accurate revolver cartridges made. It is reloadable and the mid-range or gallery loads are marvelously accurate and most desirable for snap shooting or shooting at moving objects. The regular .44-40 Winchester cartridge is not so uniformly accurate and while reloadable with the full charge, it is not as good as the .44 Russian; on account of the shells being made of lighter material and slightly bottle necked. My personal choice of a cartridge for the various lines of shooting mentioned would be the .38-caliber S. & W. Special. A revolver taking this cartridge will also shoot the .38 long Colt, .38 short Colt, .38 Colt special, .38 S. & W. special, U. S. Service C. cartridge and the full and mid-range loads. Both the Colt and

S. & W. Single Action revolvers in the models described are belt guns and carry well in either hip or shoulder holsters. Should you decide on the Colt Single Action, I would advise a 5½-inch barrel as it makes a quicker gun to draw and lighter to swing when snap shooting than the 7½-inch barrel. If you decide to purchase the S. A. S. & W. .44 I would suggest the 6-inch barrel. As between the Colt S. A. Army and the Bisley model I would prefer the former; it weighs less and to my mind the grip is placed at a better angle for quick work. If you were not committed to the Single Action type I would recommend the Colt Army Special Double Action .38 with a 6-inch barrel. This arm weighs but 34 ounces and the difference in weight would be a distinct advantage in quick work such as shooting at flying objects. This however would make but little difference if you can handle the heavier weapons. A good general rule for a trigger pull on an arm intended for target practice or snap shooting is one that will trip at about the weight of the arm. I do not favor the .45 caliber on account of excessive recoil. The .38 S. & W. special cartridge is nearly or quite as effective as the .44 Russian or the .44-40 Winchester with much less recoil.—R. A. K.]

### CHOOSING A .22 RIFLE

EDITOR GUN DEPARTMENT: I am contemplating the purchase of a .22 caliber repeating rifle for target practice and small game shooting. What make and what model would you advise me to purchase for the above requirements? I should like an arm that will take the .22 caliber cartridges in different lengths. Yours,

IRA GOODWIN.

[The Winchester Model 1906 Repeater, the Savage Model 1903, the Remington Model No. 12, the Marlin Model No. 20, will all take the .22 short, .22 long and .22 long rifle cartridges in the one gun without adjustment. The Winchester with Standard length of barrel, 20 inches, weighs 5 pounds. The Savage with standard length of barrel, 24 inches, weighs 5½ pounds, barrels may be had up to 30 inches. The Remington No. 1 standard, with 22-inch barrel, weighs 4½ pounds. The target model and the gallery special No. 2 and 3, with 24-inch barrels weigh 5½ pounds. The Marlin No. 20, with 23-inch barrel, weighs 4 pounds 2 ounces. You can make no mistake in purchasing any of the rifles above mentioned. For target shooting these would be a slight advantage in the heavier arm and the longer barrel. All the rifles here named are operated on the trombone system, which has proved to be superior to all others for the small bore repeater.—R. A. K.]

### TWELVE AND TWENTY GAUGES.

EDITOR GUN DEPARTMENT: I am about to purchase a new gun but have not decided which gauge I shall get and would like your opinion. I am only a fair shot on wing and was thinking very seriously of getting a 20-gauge but unless a person is a good shot think possibly I can get better results out of a 12-gauge. Now please



let me have your honest opinion on this subject and I will appreciate it very much. Please tell me length of barrel, gauge and boring. I wish to purchase a good brush gun for quail, pheasants and rabbits, and good strong shooter.

Very truly yours, SHERWOOD LANDING.

[You do not say whether you have decided to purchase a double gun, a repeater or an automatic. It is therefore difficult for me to advise you. Assuming that you will purchase a double gun and have decided on the make, I would suggest 30-inch barrels, the right a modified choke for quail, grouse and rabbits, the left a full choke for longer range shooting. The 20-gauge is destined to become a very popular gun in time, and if your shooting was limited to the game above mentioned or if you had other guns for heavier shooting or were an expert shot the 20-gauge would be a very desirable addition to your battery. If however you are limited to one gun I would recommend the 12-gauge. Should you decide to purchase a repeating shot gun I would advise a 30 or 32-inch barrel, full choke. You could then use the brush loads for cover shooting and the regular loads for heavier game and trap work. The 20-gauge will not throw as much shot nor give you as dense a pattern at a specified distance as the 12-gauge. We will have several very able articles from the pens of some of the best writers in the country covering all the points upon which you desire information. These will appear in the coming numbers.—R. A. K.]

#### ANENT WINCHESTER MODELS

EDITOR GUN DEPARTMENT: I am enclosing herewith three duplicate targets made with my .30 U. S. Winchester at 200 yards. The scores were fired by one of the Winchester expert shots at their factory, where I sent it to be tested for accuracy. It was my intention to use the rifle for match shooting at 200 yards on a German Ring Target, but now I am not satisfied with the grouping of the shots. What do you think about it as related to firing at the German Ring Target at 200 yards? What size group would you pronounce these targets? I feel disposed to buy a caliber .32-40 single shot Winchester for 200-yard work. Would I get as good a barrel in the standard grade listed at \$16.00 as I would in one of the "special sporting" grades listed at \$34.00 or is the difference in price in the finish of the stock, forearm, pistol grip, checking, etc.? About what group could I expect from a standard grade at 200 yards? Do both of the Winchester Target model rifles group the shots in a 1½ inch circle at 200 yards? Could I get one of their best barrels fitted to a plain walnut stock with a cheek piece. Do you think the cheek-piece an aid to good shooting? Yours, J. A. BOTTKOL.

[I would not condemn the .30 U. S. Winchester rifle even on the showing made by the factory test. You will note that the first target shows six shots in a group 1½ by 2½ inches, and one shot scattering that would enlarge the group so that it would take a circle seven inches in diameter to enclose all the shots; evidently the one wild shot was caused by a poor hold or some other cause that might be remedied. Target No. 2 shot on March 23rd, shows a more open group,

but the seven shots could be touched or enclosed by a five-inch circle. Target No. 3 shot March 24th, shows a group of six shots that a four-inch circle would enclose, and one scattering shot that would enlarge the circle to six one-half inches. Thus the whole series of shots, twenty-one in all, shot on three different days, at a range of 200 yards, can be enclosed by a circle seven inches in diameter. The three targets show the direction of greatest deviation to be vertical. Target No. 1 close to the bottom of the 8-inch bulls-eye. No. 2 slightly higher and No. 3 near the top of the bulls-eye. Assuming that the ammunition was taken from the same lot, the difference in the position of the shots would indicate that elevation was influenced by changes of light or a slightly accelerating wind. The lateral deviation is but two inches from vertical center of the bulls-eye. Basing my calculations on the targets before me, I would say that with proper ammunition, and tested under uniform conditions your barrel will shoot consistently into a four-inch circle. In shooting for a group to test the accuracy of a barrel it would be manifestly unfair to conduct the test under varying conditions. To do so would be more in the nature of a test of the marksman. Should you decide to indulge in match shooting on the German ring target to any extent, I would advise you to invest in a regular match or Schuetzen rifle. To attempt to compete with a regular hunting arm with light, short barrel and factory ammunition of various makes, with a finely sighted, heavy Schuetzen rifle with delicate set trigger and all the other accessories, would be to heavily handicap yourself. We may question the practicability of Schuetzen methods, but we cannot challenge the results obtained. By reloading your shells for the .32-40, cheap shooting may be had while your rifle will last indefinitely. I am of the opinion that the difference in price between the standard grade and the special sporting grade represents the extras, and superior finish. The material is the same in both; they are bored and rifled by the same workmen and machinery and my experience and observation prompts me to say that there is no difference in their average accuracy. The best target I have ever seen was made with a regular factory Winchester barrel. The Winchester Company will make any style of stock, with or without pistol grip in plain or fancy walnut with cheek piece, if desired. The cheek piece is a valuable feature on either target or sporting rifle. If properly placed and of the right thickness it should direct the line of sight squarely over the center of the bore. I would suggest that should you order a special barrel, have the rear sight slot omitted; it is not only unnecessary on a target barrel but is unsightly and a damage to the arm. I would be pleased to help you further with the specifications when you are ready to place your order.—R. A. K.]

#### SPRINGFIELD SHOT CARTRIDGES

EDITOR GUN DEPARTMENT: Where can I get shot cartridges for the .40-70 caliber Springfield rifle? Please answer through the columns of the Outer's. ARTHUR FREEMAN.

[You can get shot cartridges for the .45-70 Springfield rifle from Francis Bannerman, No. 501 Broadway, New York. When ordering specify size of shot desired.—R. A. K.]

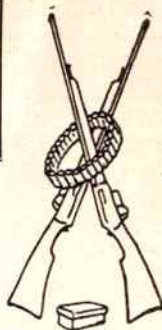




## GUNS AND AMMUNITION

EDITED BY ROBERT A. KANE

This department is intended to be a place for the exchange and discussion of views on any subject pertaining to arms and ammunition, from which no one with an idea to advance shall be barred. The only conditions are that the opinion must not be manifestly absurd, that it be expressed in courteous language and that no personalities be indulged in. Each opinion is printed for what it is worth and its publication does not commit the editor to the view expressed. The widest range will be permitted and our readers are invited to make free use of these pages, but it is important to remember that *under no circumstances will personalities ever be permitted.*



# THE GRAND AMERICAN HANDICAP

By D. H. EATON

THE eleventh annual Grand American Handicap is only a memory, a pleasant one to all, and especially so to the fortunate ones who captured the honors and the prizes. This banner event in the trap shooting world was held for the third time on the grounds of the Chicago Gun Club, located some sixteen miles south of the city, and was the most successful of the series. There have been others with a larger attendance, notably in 1907, when 495 shooters entered for the big Handicap, and 459 started in the event on these same grounds, but at none have records been broken and new ones established as at this one. On the first day of the shoot J. W. Garrett, of Colorado Springs, Colorado, broke 100 straight, a feat never before performed in a programme of mixed singles and doubles. A new squad record was also established, 100 straight, all the men in the squad shooting from twenty yards. The winner of the Grand Handicap made a perfect score of 100. The previous record for this event was held by R. R. Barber, of Paulina, Iowa, who won with 99, at Indianapolis, in 1905.

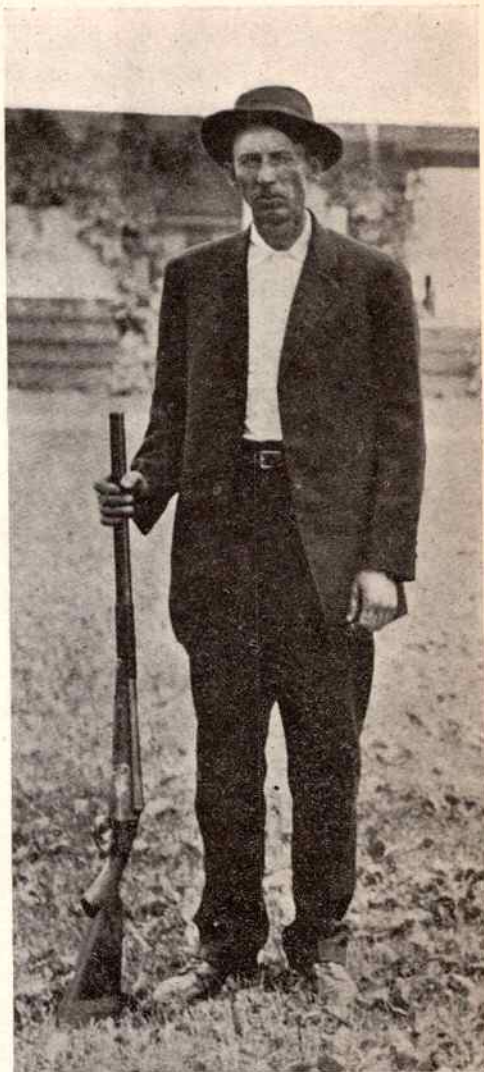
Mr. Elmer E. Shaner, the secretary-manager of the Interstate Association, was in charge of the tournament as usual, and to his thorough knowledge of the game, and executive ability, may be credited the success of the affair, and the smoothness with which it was pulled off, not a hitch occurring from start to finish. Mr. Shaner is in a class by himself in tournament work, and his ability is recognized and conceded by every trap shooter in the country. The smiling face of Fred Whitney, of Des Moines, Iowa, again greeted the shooters at the cashier's window, as it has done at many previous Grand Americans, and as all shooters hope, it will continue to do for many years to come. His presence in the capacity of cashier was a guarantee that the financial end of the tournament would be run ac-

curately. Bernard Elsesser, of York, Pennsylvania, was again in the position of compiler of scores. Mr. Elsesser is an expert in tournament figuring, well liked by the shooting fraternity, and he did not keep the boys waiting for their money very long. Among his assistants were Messrs. Hoffman and Hitchcock, both of whom acted in the same capacity at the other Grand Americans held in Chicago. Many shooters arrived in the city on Sunday night, in order to be on hand for the practice events of Monday, in preparation for the more serious work of the week. The Practice Day programme consisted of five events in the morning and the same number in the afternoon, 200 targets in all, and included two events at ten pairs of doubles. The weather was about all that could have been asked for, except that it was a trifle too warm for comfort, but other conditions were of the best, and high scores ruled. The morning's programme had 103 entries, and of these W. H. Heer, better known as "Billy" Heer, of Guthrie, Oklahoma, was high honor man with 98. J. S. Day, of Midland, Texas, was the runner up with 97. Then came C. M. Powers, of Decatur, Illinois, who divided third place honors with Fred G. Bills, the local professional expert, on 96. Jesse Young, the holder of the amateur state championship, tied with J. R. Taylor, C. G. Spencer and J. R. Graham on 95. Mrs. Adolph Topperwein, of San Antonio, Texas, the only woman entered in the big shoot, put up a score of 91. Another notable present was John Philip Sousa, of New York, the well known band leader. He has been following the trap shooting game for a comparatively short time, and his score of 86 was a very creditable one. The event at the doubles, No. 3 of the programme, was the rock on which many good scores were wrecked, C. M. Powers being the only one to get by without coming to grief. This



event prevented any very long runs, the best were made by J. S. Day, 51 and H. D. Freeman, 50. In the event at doubles there was one perfect score made during the day, two 19's; seventeen 18's; twenty-two 17's. The afternoon programme had 118 entries, and J. R. Graham led the bunch with 98. C. M. Powers was second with 97. H. W. Cadwallader and R. A. King, came next with 95 each, and the professionals, C. A. Young and A. Killam had 94 each. At 1:40 the first squad finished the last 100, and at 4:30 the last shot was fired. High honors for the day were shared by C. M. Powers and J. R. Graham with 193 each. F. G. Bills, J. S. Day and W. H. Herr were second with 189 each. Jesse Young and J. R. Taylor, 184 each. Mrs. Topperwein finished the day with 184, getting the best of some of the expert shots of the country. Robert Thompson, who later was destined to set a new mark for the classic event, gave little indication of his ability, as he went out with only 164. The shooting was done over three Ideal-Legget and two Western McCrae traps, and they all worked perfectly. Charlie North was looking after the former and the latter were in charge of H. E. Winan, East Alton, Illinois.

The regular programme was begun on Tuesday, four events at twenty singles each, and one at ten pairs of doubles being scheduled. The attendance was very much larger than on Monday, 229 shooters being entered. The doubles again proved a stumbling block and many good scores were spoiled in this event. Mrs. Topperwein missed but two targets out of the 80 singles but dropped four in the doubles; at that she had a total of 94, which is traveling a pretty good pace. The weather was extremely hot with a light breeze, which afforded little relief and made a trip down the line a decidedly uncomfortable experience. The professionals captured the high honors of the day, with some of the amateurs giving them a close race. To J. W. Garrett, of Colorado Springs, Colorado, belongs the honor of establishing a record which will stand as long as the sport continues. It may be equaled, but can never be excelled. When he finished the third event, at doubles, with an unbroken run of 60, those who were following the work closely, began to pay special attention to him, and when he took his place for the fourth event, a big bunch gathered back of the trap to watch him. Another straight was recorded, and the interest began to be intense. As he went up for the final 20, predictions were made that he would not stand the strain, but those who knew best were confident that he would pull through. One after the other the targets were centered and broken cleanly, up to the ninety-ninth, and here a balk occurred which would have thrown a majority of shooters out of their stride. When the trap was pulled the target came out in pieces. Without removing his gun from his shoulder Garrett again called pull, with the same result. Without a sign of excitement he ordered the trap tested, and then broke the target. After the other members of the squad had shot Garrett called for his last target, and apparently without an effort smashed it. The crowd went wild with enthusiasm and Garrett received many warm congratulations on his wonderful work. Among the first to shake his hand was F. G. Bills, who



RILEY THOMPSON, WINNER OF THE G. A. H.

held the record previously, having broken 99 out of 100 at the Western Handicap, in Des Moines Iowa, this spring. Second high honors among the professionals were divided by W. H. Heer and H. D. Freeman, who broke 98 each. F. G. Bills, J. R. Taylor and W. R. Crosby, 95 each. W. Henderson and Fred Gilbert, 95 each. Walter Huff divided honors with Mrs. Topperwein on 94. High Amateurs were A. Vance with 97; C. M. Powers, J. S. Day and R. A. King, 96 each; F. W. McNair, 95; Ed. Auen and Fred Ellett, 94 each. In the event at doubles J. W. Garrett, Fred Gilbert, W. D. Stannard and J. S. Day broke straight, and nine shooters went out with only one missed. The squad record for the day was made by squad No. 12, consisting of F. Le Noir, McCrae, P. C. Ward, C. G. Westcott and





GUY V. DERING, WINNER AMATEUR CHAMPIONSHIP

F. Bailey, all of whom broke straight with the exception of Ward, who missed one target, the total being 99. The long run honors, of course, went to Garrett; C. A. Young was next with 82 to his credit. Max Kneussl got 62 without a miss. The shooting was started at 9:50 and the programme was finished at 3:40. Not a hitch occurred during the day to cause any delay. There was a large gallery watching the shooting, and an unusual number of the fair sex were present, evincing much interest in the sport.

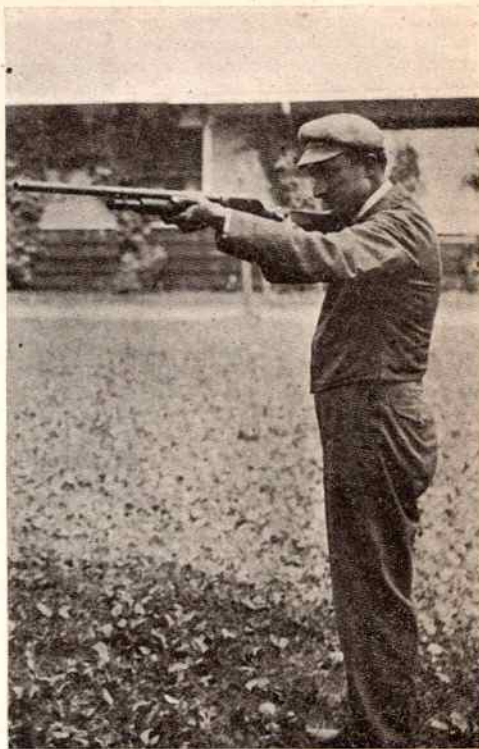
The high temperature continued on Wednesday, the second day of the tournament, and a high degree of humidity made it still more uncomfortable. But in the interest occasioned by the close fight for first place among several of the shooters, such minor matters as a little too much heat were forgotten. The attendance of spectators was largely increased, and as the finish was neared every point of vantage along the firing line was occupied. The event was the preliminary Handicap at 100 single targets, the handicaps being the same as for the Grand American. The committee having this thankless, but important duty in charge was composed of J. S. Young, Chicago; E. S. Rogers, Cleveland, Ohio; T. H. Clay, Jr., Austerlitz, Kentucky; James W. Bell, St. Louis, Missouri, and Elmer E. Shaner, and the almost entire absence of criticism proved

that their work was well done. The entrance in this event showed a falling off from that of last year, on the same grounds. This year there were 318 entries and 316 starters; in 1909 there were 375 starters. The start was made in good season, the first shot being fired at 9:17. At 3:30 one squad had finished the event and at 5 o'clock the last squad sheet had been handed into the office. Fifty-five professionals took part in the contest, shooting for targets only, and what glory they could get by making high scores. The race proved a most exciting one, and was not decided until the last shot in the shoot-off was fired. At the close of the third round three men were tied on 60 straight; C. M. Powers, twenty yards; J. S. Day, nineteen yards; W. J. Raup, sixteen yards; C. E. Shaw, sixteen yards, with 59 and F. C. K. Burnham, sixteen yards with 58, were still considered to have a chance and they were watched closely. In the fourth round Powers and Day each dropped two targets; Burnham one target, and Raup and Shaw went straight. This put Raup in the lead with 80 straight; Shaw advanced to second place with 79; Powers and Day in third place with 78 each. Burnham's chances had gone a glimmering, unless the unexpected happened and the others missed more than average in the last 20. Powers, in squad No. 5, accounted for all of his and went out with a total of 98, and was a favorite, his friends considering him a sure winner, for it did not seem likely that two young shooters would be able to stand the nervous strain of such close competition, and would weaken when it came to the test. Day, in squad No. 9, dropped one and finished with 97, a tie with Burnham. Raup was in squad No. 58, and when he stepped up to his place for the final 20, the other traps were deserted, and the crowd gathered where they could see the finish. He shot a great gait missing but one target and going out with 99, a winner, unless Shaw, in squad No. 59, should go straight, which would mean a tie, and another chance for the prize. This is just what Shaw did. Undisturbed by the intense excitement evident among those watching him, and by the fact that among the crowd, close by, was his wife, he broke one target after another, until the referee called "dead" for the last one, and he had finished with 99 to his credit. Immediately after the conclusion of the event, Mr. Shaner called Raup and Shaw to trap No. 3, to shoot off the tie at 20 targets. The matter was soon settled, Raup breaking straight, and Shaw missing three, his fourth, fourteenth and nineteenth, going out with 17. Like a true sportsman he was the first to shake the hand of the victor and congratulate him on his win. W. J. Raup, the winner, is comparatively little known in the trap shooting world. He hails from Portage, Wisconsin, and his score of 119 out of 120, speaks well for his future in his favorite sport. Among the professionals, Guy Ward, J. R. Taylor and J. T. Skelly were high with 98 each, the latter shot from eighteen yards and the others from twenty yards; for a while it looked as though Skelly would go out with a perfect score as he got the first 80 straight, but he dropped two in the last twenty. F. G. Bills broke 96 from the twenty-one-yard mark, which is going just a little; R. O. Heikes and Geo. Maxwell, each from twenty yards; C. A. Young and H. Clark, both nineteen yards,



and C. T. Dockandorf from eighteen yards, also broke 96. Mrs. Topperwein's score of 95 from nineteen yards was most excellent. C. M. Powers was second high amateur with 98 from twenty yards; J. S. Day, 19 yards, and F. C. K. Burnham, sixteen yards, 97 each; W. Wetleaf, twenty yards, B. V. Veach and A. Vance, eighteen yards; J. A. Ward, J. A. Flick, P. H. O'Brien and L. Gruhn, all at sixteen yards, 96 each. Long run was made by W. J. Raup, 93; J. T. Skelly, 88; counting the last three of Tuesday's programme, gave a continuous run of 91; C. E. Shaw, 86; J. S. Day, 63; C. M. Powers, 61, and C. Burt, 60. Squad No. 33 was the banner squad of the day. In event No. 4 they put up a score of 99; C. Schafer, 19; C. R. Anderson, J. A. Smith, F. A. Stroup and C. H. Anderson, 20 each.

Thursday, the third day, and also the big day of the tournament, was much more comfortable than the previous days of the week. There was a light wind which cooled the air to some extent, while not interfering with the flight of the targets. The attendance of spectators was the largest of the week, and again the presence of the ladies was especially noticeable. There were 382 entries in the Grand American, and 364 starters, a considerable falling off from that of the previous events held on these grounds. In 1907 there were 495 entries, and 459 starters; and last year 435 started in the classic event. But if the entry was smaller, the results were very much larger. Riley Thompson, of Cainsville, Missouri, the winner, performed a stunt which has never before been equaled in the history of the Grand American, and one which can never be beaten. He captured this premier event of the trap shooting world with a perfect score of 100, standing on the nineteen-yard mark. R. R. Barber, of Paulina, Iowa, was the holder of the previous record, having won the event at Indianapolis, in 1905, with a score of 99. As has generally been the case the winner was a "dark horse," but Thompson seemed to be the least surprised of any one at his success. He claimed to have a hunch that this was his year and that he would carry back the prize with him. His shooting was of a high order. In all of the 100 breaks there was never any question as to whether the target was broken, they were all struck squarely on the nose and smashed into pieces. Thompson was one of the post entries and was shooting in the last squad, his name being the last on the list, and when he went to the trap for his final twenty, it was beginning to grow dusk, and the targets were getting rather hard to distinguish. Another thing that makes his work all the more creditable was the fact that another shooter had finished his score with only one target lost, and it was up to him to go straight, if he wished to annex the honors and the pecuniary reward that went to the first man, besides the trophy donated by the Association. He turned the trick all right, and no one was more hearty in his congratulations to the winner than Harvey McMurchey, the man who made the 99. It was 9:25 when the first event was started, and from that time until 6:40 the firing was continuous, but the event was finished, and no squads were left to finish on Friday, as was the case last year. Good scores were the rule, nearly 200 shooters making 90 or better; there were two 98's; eight 97's; thirteen 96's; twenty



C. S. SPENCER, WINNER PROFESSIONAL CHAMPIONSHIP

95's and twenty-five 94's. This last was the lowest score to get into the division of money, and each one received \$6.00. The high professionals were: H. McMurchey, 99; F. G. Bills and W. H. Heer, 97 each; L. S. German, C. G. Spencer and Mrs. Topperwein, 96 each. W. R. Crosby and Fred Gilbert tied on 93. The amateurs were headed by R. Thompson with 100; J. R. Graham, 98; E. W. Heath, L. K. Cushing, W. J. Raup and H. S. Wells 97 each; H. Dixon, H. H. Hotze, F. T. Stanton, R. Winter, C. M. Powers, Samuel Rice, J. A. Flick, J. S. Day and A. Vance, 96 each. A new squad record was established on this day; squad No. 3, consisting of F. Ellett, H. Dixon, H. D. Freeman, J. W. Garrett and J. R. Graham, all standing at twenty yards, went through event No. 4 without a miss, scoring 100 straight. H. McMurchey made the second long run of the day, 87, first honors of course going to Thompson with his straight score; J. R. Graham, 83; J. A. Prechtel, 60. The high Chiefs of the tribe of Scattershoot Indians, an organization of expert trapshooters, held its annual pow-wow this afternoon for the purpose of deciding on a place to hold the annual tournament. Spirit Lake, Iowa, was selected and the dates set for August 16, 17, and 18, with August 15 as practice day.

Friday, the last day of the tournament, was by far the most comfortable of the week. A strong wind from the north, blowing off the lake, lowered the temperature many degrees and wilted collars



were not so much in evidence as on previous days. The events for the day were the amateur and professional national championships, each at 200 targets, shot in eight events of twenty single targets each and two events of ten pairs of doubles each. The entrance was smaller than last year, the majority of shooters realizing that this is an event in which only the very best have any license to take part, and hesitating about donating the \$20.00 necessary to enter. There were forty-six amateurs and thirty-three professionals entered this year, a total of seventy-nine. Last year sixty-six amateurs and forty-two professionals, a total of one hundred and eight, tried for the prize. Guy V. Dering, of Columbus, Wisconsin, won after a close contest, with a score of 189. At the end of the first 100, Dering was in the lead with a score of 96; J. Graham 93 and J. S. Day 90. The sixth round found the men in the same positions but Graham was only two targets behind and Day four, the scores being 114, 112 and 110, respectively. In the seventh round Dering was still in the lead with 132, but Graham had crawled up to within one target, and had 131, while Day approached within two targets of the leader, with 130. The eighth round found Dering and Day tied on 150, and Graham one target behind with 149. In the ninth round Dering and Day each missed one target while Graham went straight, and the three were tied on 169. The last round was entered upon with all three men screwed up to the highest tension, Day and Graham found the strain a trifle too much and each dropped a target, but Dering broke them all, and won with a score of 189, to 188 put up by the other two.

The professional race was even a little closer and exciting than that of the amateurs, requiring a shoot-off between three of the contestants before a decision was reached. At the end of the first 100, there were ten men, any one of whom had a good fighting chance for the trophy. J. W. Garrett and L. S. German had 96 each, and were in the lead; H. Clark, C. A. Young and Guy Ward, 95 each; G. L. Lyon and W. H. Heer, 94 each; C. G. Spencer, Fred Gilbert and J. R. Taylor, 93 each. The sixth round made some changes in the positions; German was still first with 116; Garrett and Ward were second with 115; Spencer, Lyon, Young, Heer and Taylor third with 113 each; Clark had dropped from second to fourth place with 112, and Gilbert was fifth with 111. In the seventh round German was still first with 134; Garrett remained in second place, Spencer stepped up from third place, and Ward retained his position, each with 133; Clark went up one place from fourth to third; Lyon, Young, Heer and Taylor stayed third place, each with 131; Gilbert was last with 130. The eighth round produced some shifts. German first, with 153; Garrett and Spencer stayed in second place with 152 each; Clark stayed in third, Ward dropped from second to third, and Taylor remained in the same place, each with a score of 150. Lyon dropped from third to fourth place with a score of 149; Young dropped from third position to fifth with a score of 147; Heer dropped from third, and shared sixth place with Gilbert on a score of 146. The ninth round found German in first place with 172 out of 180; Spencer was still in second place, this time alone, with a score of 171; Garrett dropped to third place, and Clark stayed in the same place on a score of



W. J. RAUP, WINNER PRELIMINARY G. A. H.

170 each; Lyon remained in fourth place with 169; Ward went from third to fifth, as did Taylor, with a score of 168 each; Young went to sixth place with 167, and Gilbert was last with 165. In the last round, German dropped three targets and finished in second place with Lyon, who climbed up from fourth position, on a score of 189 each. Spencer lost one target and stepped up from second to first place, sharing the honor with Clark, who broke straight and came up from third place, and Garrett, who also broke 20 and advanced to first place, the total score being 190 each; Young broke straight and went from sixth place to third with a total of 187; Gilbert also broke them all and climbed from seventh place to fourth, in company with Ward and Taylor, on a score of 185 each; Heer got his last 20 straight and finished in fifth place with 184. The men were called to shoot off the tie as soon as the last squad had finished. The first shoot-off resulted in another tie, each man breaking 19; Garrett missing his first target, Clark



his fifth and Spencer his 19th. In the second try-out, Garrett dropped his 8th target, Clark his 12th and Spencer broke them all, thus winning the title and trophy, the first three moneys being divided equally among the three. The high amateurs for the day were G. V. Dering, 189; J. S. Day and J. Graham, 188 each; F. T. Stanton and J. B. Barto, 184 each. High professionals, C. G. Spencer, H. Clark and J. W. Garrett, 190 each; L. S. German and G. L. Lyon, 189 each; C. A. Young, 187. High squad for the day was No. 13, in event No. 1, J. R. Taylor, H. Clark, H. C. Hirschev and R. O. Heikes, each breaking 20, and A. Killam breaking 19, a total of 99. Long run of the day was made by J. S. Day, 97; G. L. Lyon had 61, and H. Clark and C. A. Young, 60 each. Only four shooters went straight in either of the events at doubles; these were C. L. Nickle, J. S. Day, R. W. Clancey and W. D. Stannard. The DuPont trophy for amateur long run was won by Riley Thompson. His straight of Thursday, which entitled him to the trophy, was augmented by the last nine targets of Wednesday and the first 21 of Friday, giving him a continuous run of 130. Of these 121 were from 19 and 21 from eighteen yards. Shooting began this morning at 9:15, and went on without delay until shortly after one o'clock, when the programme was finished. Very soon after the close of the events, all had received their money and the grounds were deserted. High professionals for the three days at 500 targets, including the doubles, were J. W. Garrett, 476; J. R. Taylor, 473; C. G. Spencer, 472. High amateurs, J. S. Day, 477, which was high average for the tournament; J. Graham, 474; C. M. Powers, 472.

On Practice Day, in the morning, 10,230 targets were trapped; in the afternoon, 11,880, a total of 22,160. Tuesday, 22,880; Wednesday, 31,340; Thursday, 35,340; Friday, 15,740, a total of 127,620 targets for the tournament. This is an average of 25,524 per day; counting ten hours to the day, it means that 2,552 targets were trapped each hour, or about 43 per minute. As the shooting did not average ten hours each day, the number trapped per hour is really many more. But these figures

give some idea of what the traps have to do at a big shoot.

The purse in the Preliminary Handicap, including \$200.00 added money, amounted to \$1,379.95. There were forty-eight moneys: First, 138.00; second, \$124.20; third, \$110.40; fourth, \$96.60; fifth, \$82.80; sixth, \$69.00; seventh, \$55.20; eighth, \$41.00; ninth to sixteenth each \$27.60; seventh to forty-eighth, \$13.80 each.

The Grand American purse amounted to \$3,739.00, which included \$500.00 added money. This was made up of 316 regular entries at \$8.00 each (\$2.00 being deducted from the entrance fee of \$10.00, for targets), 47 post entries at \$13.00 each, and 20 forfeits of \$5.00 each. There were fifty moneys. R. Thompson receiving first money, \$373.90; H. McMurchey, second, \$336.50; J. R. Graham and Geo. Volk divided the next two moneys, \$299.10 and \$261.75, getting \$280.40 each; 5th, \$224.35; sixth, 186.95; seventh, \$149.55; eighth, \$112.15; ninth to fourteenth, \$74.80 each; fifteenth to fiftieth, \$37.45 each. The 94 scores just got into the division of the moneys.

Professional purse, \$628.00, including \$100.00 added money. First, \$157.00; second, \$125.60; third, \$94.20; fourth, \$75.35; fifth, \$62.80; sixth, \$50.25; seventh and eighth, \$31.40.

Amateur purse, \$936.00, including \$200.00 added money. Ten moneys: first, \$205.90; second, \$168.50; third, \$131.05; fourth, \$102.95; fifth, \$93.60; sixth, \$74.90; seventh and eighth, \$46.80 each; ninth, \$37.45; tenth, \$28.10.

The windup of the tournament was the presentation of the trophies to the winners. This pleasant duty was performed by Mr. A. F. Hebard, the president of the Interstate Association. His remarks were short but thoroughly appropriate to the occasion, and were received with applause. The recipients all made suitable acknowledgment. Mr. Elmer E. Shaner then thanked all present for the way in which they had supported him not only at the present Grand American but in the past, and declared the Eleventh Grand American closed. His remarks were greeted with the usual ovation, and Elmer was declared to be "all right."

## AN ATTRACTIVE GUN CASE OF MODERATE COST

By MAURICE H. DECKER

THERE is always the need of a good, substantial gun case or cabinet of reasonable cost, to the man who would rather purchase two more rifles than pay \$50.00 or more for one. A gun cabinet in which one's firearms can be set away in an upright position secure from dust, yet in a position to be readily admired and enjoyed, is a valuable possession and a source of joy to the

lover of guns. Setting ones rifles away in a corner, covered with canvas or leather is by no means as satisfactory to the congenial sportsman who likes to display his treasures to his friends with the same fondness and pride evinced by the happy parent of a new ten-pound baby. Besides, there are those accessories such as cleaning rods, gun oil and ammunition which are never to be found



when wanted and which lack a handy and convenient place of deposit. Unfortunately all gun cases accessible to the shooter through dealers in sportsmen's supplies are more or less of fancy finish and very costly, and few feel justified in tying up a large amount in such a fixture.

Last summer I solved the problem by building a case myself, and the result of my efforts turned out to be highly satisfactory, presenting a more attractive appearance and requiring less labor than I had expected or hoped. A similar cabinet can be easily constructed by any person of average ability without the aid of a carpenter or woodworker, and at a cost of a little less than five dollars. The only tools necessary are a saw, hammer and plane and possibly a wood file to cut the notches in the cross bar, in which the gun barrels rest. The best lumber for this purpose of moderate cost and easy working abilities is cypress, and you will require four boards each 12 feet by 12 inches by  $\frac{3}{4}$  inch, planed and dressed smooth on both sides. Lumber of this character costs 5 cents per foot and it is advisable to personally select straight grained boards, free from knots and flaws. The dimensions given below you will notice enables the case to be made with the minimum of cutting, sawing and waste. The body of the cabinet is 6 feet high, 3 feet wide and 1 foot deep. The shelves and sides are just the width of one board and the back is made by joining three 6-foot pieces together. The series of shelves on the right hand side of the diagram are one foot wide and the gun compartment on the left measures two. The spacing of the shelves I have left to be determined by the builder to suit his own taste and requirements. The diagram only intending to make clear the arrangements of the shelves and interior apartments. The top three shelves below the one running the entire width of the case are intended for ammunition and are only nine inches wide, whereas the others are fully a foot in width. These three shelves I spaced to hold a definite number of shells in boxes of different sizes and their only reaching to within three inches of the front breaks the monotony of those below and adds greatly to the appearance of the case as a whole. The guns set in the left hand side upon the bottom shelf, the barrels resting into the diagonal cross piece which slants at an angle of about 30 degrees. This diagonal feature makes possible the holding of both long and extremely short guns and looks much better than one placed straight across. It is a stick 2 inches by 1 foot set on edge, and nailed to the back, with different sized notches or half round hollows cut in some  $\frac{3}{4}$  of an inch to hold whatever guns the builder intends to place in it. Small headed or "finishing nails should be used throughout and the joints made as close as possible to exclude all dust.

The top extends  $2\frac{1}{2}$  inches over the body of the case at each end and  $\frac{3}{4}$  of an inch over the front, or just the thickness of the doors. Curtains can be hung in front but two doors of plain wood are more satisfactory. My case is equipped with two doors, a narrow one closing the row of shelves on the right and a wider one covering the gun compartment on the left. They extend from the top, fitting snugly under the projecting top down to the bottom shelf, leaving the space below to the

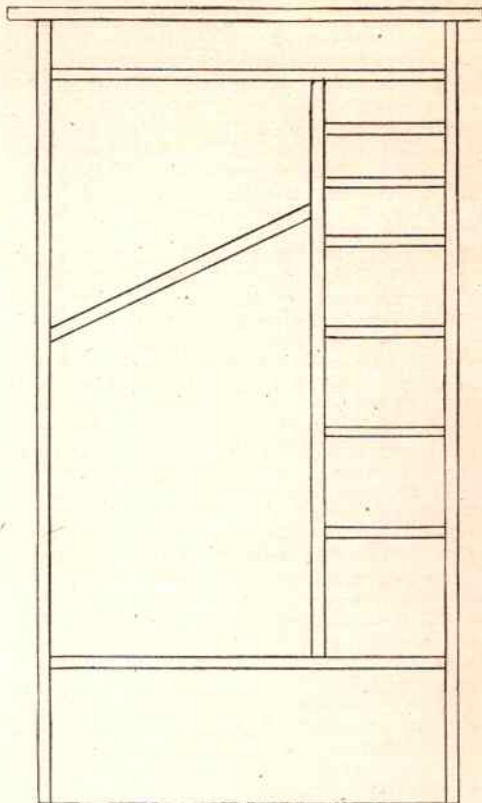


DIAGRAM OF CASE

floor open, which forms a handy receptacle for boots and the like. The doors are made of wainscoting which being matched and grooved, relieve their plainness and enable them to be built and hung with little labor. Wainscoting boards come six feet long and four inches wide and some unavoidable waste occurs in the making. The doors are hung to narrow strips of the same length, nailed on the front at each side, with fancy shaped, polished brass strap hinges which add 50 per cent to the attractive appearance of the outside. Six hinges, three to each door, will be required to hold them firm and secure from sagging.

The case can be finished in any style or color desired. I choose golden oak and the cabinet, after being sandpapered, was given one coat of golden oak stain applied inside and outside and rubbed in with a piece of cloth, and later three coats of glossy varnish. Many changes and improvements in the construction of such a case will doubtless suggest themselves to the mind of the builder. The wide top shelf can be omitted entirely if so desired and the space gained above the guns can be hung with hatchets, hunting knives, belts, etc. The whole construction being elastic enough to fully meet the requirements of each individual builder. My diagram and suggestions are intended merely to give you an idea and a start.



# MORE ABOUT THE ROSS RIFLE

By E. C. CROSSMAN

**I** FIND in the Outer's Book for May a letter from Mr. Chas. Askins in regard to the Ross rifle and the .280 cartridge. Mr. Askins having called upon me for further information in regard to the Ross and its cartridge and also having signed his name to some wondrous statements regarding the Ross, I feel moved both to reply to his queries and to inquire where the gentleman derived the information regarding the rifle which he imparts in his letter and which I cannot find in any printed matter on the subject.

I might state as a prelude that so far the Ross is all golden curls and the rest that goes with them and that the post-nuptial revelations that so marred the symphony of his young friend's married life have not appeared in this Canuck arm. Seriously the Ross has but two objections that can be considered at all. One of them is the slightly increased effort necessary to extract a sticking shell, as compared with a common turn bolt pattern of rifle, and the other is the comparative inaccessibility of parts. The first objection does not mean that the rifle lacks power, but that the effort is made in a different direction and to a man unaccustomed to the rifle, it is an effort when the rifle is fired rapidly from the shoulder. In the turn bolt rifle, a shell that sticks harder than usual compels the user to take the rifle from the shoulder and to apply the effort while the rifle is at the hip. With the Ross the proper place for an extra hard pull is at the shoulder, where the rifle is pulled against a solid medium. I have not been able to find a shell that would not come in response to a quick, firm jerk, with the rifle left in position for the next shot and with the factory loaded shell there is no additional effort required over the pressure necessary to open the empty gun, but I can see that the man who reloads and does not resize carefully, or who uses supercaliber bullets that stick in the "lead," might find the rifles at first harder working than the turn bolt with its cam system of seating and extracting—and its slower speed of fire through dropping the arm to the hip to work the bolt.

The question of accessibility of parts seems to be one that was decided by the Ross Company. They write that the first rifles they put out were the easiest things in the world to take apart—so easy in fact that every Tom, Dick and Harry who bought one, clawed it apart—lost some of the parts and then blamed the rifle for failing to work with a minor part like the bolt or something of the sort missing. Through the trouble of this sort they were impelled to make the gun harder to take apart to its remote details—made it fool-proof and so cut out the complaints from the gentlemen to whom the epithet applies. As at present made, the bolt slides out at a touch of a plunger, leaving the barrel clear from end to end and the magazine accessible, but the writer would prefer being able

to get at the magazine a little more readily in case too much gravel and limbs and what-not gathered therein.

I would like to suggest, first, that there is enough in a new cartridge like the .280 and the Ross rifle to discuss without befogging matters by foolish and unfounded statements such as Mr. Askins makes in his letter and which may pass current with those who do not stop to think. Legitimate criticism is a desirable thing, it serves to bring out weak or strong points of an arm or cartridge and the writer hopes to see the Ross torn to pieces and dissected most carefully for the information of all of us. However, we are learning nothing from statements that a table from the British Text Book of Small Arms is made "for suckers," or that the breech pressure of the Ross is "seventy thousand pounds." There is nothing gained by this sort of procedure. Anybody familiar with the standard books on ballistics and on rifle shooting is familiar with trajectory tables akin to one shown in the Outer's Book—and which Mr. Askins evidently thinks is a picture of the flight of the bullet through the air, instead of an attempt to show the trajectory above the line of sight in feet and inches. A person making this statement—that such tables are "intended to catch a sucker," is confessing very naively that he is unacquainted with the insides of very many books on rifle shooting.

Mr. Askins also inquires why the .303 British should be elevated to 65 degrees for a range of 1000 yards, basing his inquiry on this same fish-catching table that so sticks in his craw. Comment on this is probably superfluous but for the gentleman's personal benefit I would like to point out that I have never heard of a rifle that was elevated 65 degrees for any range whatever and labored under the impression that 45 degrees with rifles using Spitzer shaped bullets was the extreme limit of the angles of elevation, while with the bullets of the older type about 32 degrees marked the limit of elevation when the extreme range was desired. The actual angle of elevation of the .303 rifle for 1000 yards is *one degree, 28 minutes, which fact is plainly stated in the table referred to*, the figures being given in minutes instead of degrees and reading eighty-eight minutes instead of the equivalent one degree and twenty-eight minutes. This would seem plain enough for the ordinary reader.

Major Freemantle's "The Book of the Rifle" abounds with these offensive sucker-catching tables but in spite of them he has sold a number of copies of his volume.

A table drawn to exact scale, as the gentleman seems to desire, if printed across two pages of the Outer's Book, 11 inches, would show the departure of the Ross bullet from a straight line across the two pages as about 1-30 inch, which is about the height of the type used in printing the gun



department in this magazine. Dividing this into nine spaces to show the number of feet the bullet rises from the lines of sight would make a nice study for some one with a microscope and a fancy for such work.

Mr. Askins is advised to plot such a table for himself—it is simple, merely a matter of proportion, the bullet departing from the line of sight nine feet in round numbers, shooting at 1,000 yards, or in other words the maximum ordinate is 1-333 of the distance from the rifle to the target. This would make a nice illuminating chart to show the number of feet the bullet rose above the line of sight.

The pressure of the .280 cartridge varies from 49,000 to 51,000 pounds, according to the bullet used. There is no statement in my article or in any of the Ross literature that the pressure of this cartridge is 70,000 pounds, and I would be interested in hearing where the gentleman got these figures as they constitute something new and startling and if they are true, somebody else can shoot the Ross—it's too strenuous. However, I trust that when run down the figures will prove to be as accurate as the 65 degrees of elevation for the .303, taken from an elevation chart in this Ross article. Without meaning to be offensive, I would suggest that it would be well for Mr. Askins to have his trigger pull increased to prevent premature discharge in the future, akin to his characterization of a table from an official text book as an attempt to catch suckers or to fool that part of the public that can be fooled all the time. There are several books on rifle shooting containing such elevation charts that would interest him as he appears never to have seen one before.

Taking up his other queries as to the performance of the .280 Ross, I have not attempted to see what sort of a target it would make in firing fifty shots without cooling the barrel or without cleaning. I see no occasion for such tests. Cleaning a rifle of this class is uncalled for and inadvisable until the day's shooting is over when metal fouling does not pile up, while the heating of the barrel has no effect outside a slight increase in elevation which at 200 yards off-hand is not noticeable enough to cause any worry in game shooting—for which Mr. Askins says he would want such a rifle. Nor can I see where the gentleman would fire any such number of shots at game—unless the said game was tied up in fair view and the gentleman had more ammunition with him than the average hunter carries. When our New Springfield and its performances are so well known in this country it is foolish to waste expensive ammunition in making tests that are of no value and that one's old score book will probably settle if kept through a couple of seasons. The .280 and the 1906 are very much alike in most respects.

Metallic fouling does not seem to pile up in the Ross and I have not been able to discover the slightest particle of the characteristic flakes that gather at the muzzle of the new Springfield after 50 or more shots. Nor does a bullet pushed through the barrel reveal any diminishing of the bore near the muzzle, which might happen with metal fouling piled up evenly and not showing to the eye.

I do not know whether the fouling will be greater than the .30-40 or not but naturally suppose that it will be. The only way I would have of determining this would be to fire an equal number of

rounds through both barrels, adding the ammonia dope and then having a quantitative analysis made of the ammonia. Not being able to discover enough metal fouling in the Ross to make trouble, I have not been interested enough to have this done although I shall do it some day, using the New Springfield as a basis of comparison instead of the defunct .30-40.

The accuracy life of the Ross barrels is given as about 8,000 rounds. A Ross which had been fired 2,000 times landed one of the great English long range matches at Bisley and then cleaned up half a dozen others for good measure, which would seem to show that the Ross would last at least this long for hunting purposes. The use of mobile lubricant would add still more to the life of the barrel, Lieut. Whelen, estimating the wear and tear on the barrel to be about one-fourth that experienced when using naked bullets.

For hunting purposes there is no use in questioning the life of a barrel if it will last 4,000 rounds or more. Where is the hunter who fires this many shots at game and in his occasional practice unless he also is a target crank and follows the game pretty steadily?

The difference between the elevation of a rifle shot off-hand and with muzzle rest depends more upon the weight of the barrel than upon the cartridge used. A .30-40 with extra light barrel of the class of the Featherweight Savage would show more difference than the Ross .280 with its heavy barrel.

Using this Ross with British army rear sight and ivory bead front—a rather crude combination, I can detect no difference in the elevation when shot off-hand, from the kneeling position and from the prone position except that when shooting prone, the shots grouped about four inches lower than the off-hand group. This may have been due to the pull of the sling I used or to the different resistance of the shoulder but such tests are easily made with any high power rifle and will differ but little from the Ross.

Mr. Askins is doubtful about the ability of a light rifle overcharged to do good work. This is probably true to some extent, but I can only refer him to the New Springfield, a rifle lighter barreled than the Ross and with the same breech pressure and weight of bullet, as an example of what might be termed a light rifle overcharged.

I note that it matters nothing about the trajectory of a cartridge—in order to kill you first have to hit.

I have been laboring under the impression that the sole reason we consider the trajectory of a bullet is through its increased or diminished chances of hitting, through its increasing or lessening the cost of errors in judging distance or through its flat trajectory, doing away with the necessity for monkeying with sights at hunting ranges. I have never heard the trajectory mentioned in connection with the *killing* powers of a bullet, after it hit.

A hunter who cannot learn the variation of his rifle from the normal, when shot with muzzle rest or from any other unusual position, before the rifle is worn out—at the end of four or five thousand shots—has no business trying to discover these variances at all—he evidently cannot hold twice in the same place. I should say that fifty rounds should be enough to demonstrate to the most numb-



skulled hunter what these positions do in affecting the strike of the shots at hunting ranges.

As far as velocity is concerned, it is hardly reasonable to suppose that a rifle giving a very flat trajectory would be more likely to alter its groups through changes in the resistance to recoil or in the support of the arm, than a rifle giving a higher trajectory and therefore an increased divergence at the target for variations at the muzzle of the rifle.

The Ross rifle is to the writer's mind the best bolt action extant but it has been gone into pretty thoroughly and is not entirely new. Therefore it would seem that it has been gone into enough for the time being.

The .280 cartridge, however, is new in that it is the first cartridge in the world of the ultra high velocity type, its inventor designed and used the Spitzer bullet even ahead of our German friends—who usually claim everything that they can—and it uses the first successful bullet of Spitzer shape that will mushroom on game—and not in going through the air or on the front of the rifle's magazine before being fired. The writer did not devote much space to it, not desiring to drag out the article to any greater length than it had already gone, but it might be interesting to look into this cartridge and its development a trifle more.

Most of the readers of the *Outer's Book* are familiar with the recent changes in the military cartridges of the world, first to the small-bore, high velocity type of the .30–40 and later to a still higher velocity, a lighter bullet, heavier powder charge, and last but not least a sharp pointed bullet. This last change is the more recent. We have been told for years that the shape of the front end of the bullet made no difference and that a sharp point bullet offered no advantages. To the Germans has been given the credit for the re-discovery of the sharp point bullet and its application to the military high velocity cartridge, but Ross worked on this bullet and demonstrated its efficacy even before our Teutonic friends took it up. The word "Spitzer" by which we designate the peculiar sharp point bullet is a corruption of the German word "Spitzgeschoss," meaning a sharp point bullet and we in a way admit the priority of the Germans by using their term for the bullet.

While great velocity, increased ranging power and superior accuracy were obtained from the use of the new cartridges of the U. S. 1906 and new 8 mm. German type, it remained for Ross to go at the matter in a scientific manner, to determine the caliber by some other manner than mere rule of thumb and to work out the weight of the bullet to obtain the greatest ranging power consistent with the allowable recoil and chamber pressure.

Both the United States and Germany stuck to the .30 and 8 mm. caliber because both nations had used these calibers in the army rifle prior to the adoption of the new cartridge. The United States had a large supply of rifles on hand chambered for the 1903 cartridge, which is the 1906 case with the 220 grain bullet, the case of the 1906 differing in the slight detail of being about  $\frac{1}{4}$  inch shorter in the neck. With the coming of the Spitzer bullet the rifles were rechambered for the 1906 cartridge and reissued. The Germans went through much the same experience. It was in a way a case of military necessity.

Ross, being unhampered by considerations of economy in the production of his .280 cartridge, did not select a certain caliber arbitrarily and then try to obtain the ballistics he desired from this fixed caliber. The arrival of the designer at the .280 caliber was the result of a process of elimination which may be summed up as follows—always keeping in mind that Ross was working on a military cartridge—the sporting end is the minor one:

First, a certain recoil was the limit, over which he could not go. The tendency is toward lighter rifles for military purposes, our own 8 $\frac{1}{2}$ -pound New Springfield for example. The designer who departed from accepted proportions of weight of rifle and recoil would have hard work getting his arm and cartridge considered by any nation.

Second, to obtain a "danger range" up to the limit of ordinary accurate sighting on an object the size of a man, which we take as 1000 yards, a velocity of at least 3,000 foot seconds is essential.

Third, to get enough weight to enable the bullet to hold its velocity to a reasonable degree and yet to keep the recoil with the high velocity, to reasonable limits, a weight of bullet of not much over or under 150 grains was found to be essential.

The weight of the bullet, the velocity, the chamber pressure allowable and the necessity for a caliber large enough to produce enough shock to stop a man, being known, the question of the caliber became one of elimination, cutting out the calibers that would give too little shock, through the small cross section of the bullet on the one hand and dropping the calibers on the other that would entail a sacrifice of the ranging powers of the bullet through the bullet's too low density—low proportion of weight to the diameter of the bullet.

The .30 caliber is one of the latter class, giving a density too low that the enormous velocity is of little advantage at military ranges and it being impossible to increase the weight of the bullet on account of the increase in recoil and pressure.

The .256 cartridge, which is one of the most popular of the game shooting class in England, gives too little shock with the full metal patched bullet and in addition, to obtain 3,000 foot seconds velocity with the accepted weight of bullet, 150 grains, would entail enormous chamber pressure or a very bulky cartridge.

As a choice between the evils of non-stopping power and unreasonable chamber pressure on the one hand and a too low density of bullet on the other, the 7 mm. was settled upon as the nearest perfect caliber, the cartridge being designated .280 inches, but being in caliber practically the 7 mm. The latter bullet calibrates .285 inches and the .280 bullet .287 inches, to use in a barrel of .289 inches, a departure from accepted standards of rifle boring which will be touched upon further.

The cartridge finally evolved is the finest military cartridge in the world from every standpoint and incidentally a world beating target and game cartridge as practical experience has shown.

The details of the case have been given in the *Outer's Book*; it being a rimless cartridge of the modern magazine type, of large size, great taper and enormous powder capacity. For comparison the .280 case holds 68.1 grains of water, the .30–40 about 46 grains and the 7 mm. Mauser 53.5 grains. The New Springfield holds about 57 grains.



One reason for the large size of the case is to permit the use of the superior and more reliable nitro-cellulose powder in place of the older nitro-glycerine type which in a rifle of the .280 Ross class would be fatal to the barrel.

In sectioning the case one is struck with the strength of the construction. It is far heavier than the New Springfield, which is itself a very heavy cartridge. The .280 is heavier both at the head and along the side walls of the chamber for the first inch.

The result of this long process of calculations and of elimination is a cartridge with a military "danger space" of 900 yards, a chamber pressure no greater than that of our New Springfield with its 2,700 foot seconds velocity and a temperature inside the barrel no higher than that of the New Springfield. At the long ranges the New Springfield is hopelessly outclassed, as the accompanying tables of trajectory will show.

It should be kept in mind that the .280-inch is designed for a military cartridge and while it is superior to any game shooting cartridge on the globe, this is merely incidental. To consider this cartridge from the standpoint of game shooting alone is almost as ridiculous as to look into the Ross rifle with a view to its adaptability as an alpenstock or as a dummy rifle for teaching cadets the manual of arms.

The patriotic American rifle crank, when reading of this .280 cartridge and its performances, naturally turns to our own 1906 New Springfield cartridge as an American cartridge fit to compare with this Canuck interloper. For the reason that the 1906 is the only cartridge fit to compare with this .280 although it suffers considerably through the comparison, the writer presents herewith some figures by which an idea may be gained of the difference in the two.

Danger space of the Ross .280, 900 yards.

Danger space of the 1906 Government, 600 yards.

Height of the .280 half-way to 1000 yards, 8 feet 7 inches.

Height of the 1906 half-way to 1000 yards, 14 feet 1 inch.

The following table gives the angles of elevation of the two rifles up to 2,000 yards:—Figures in minutes of angle.

|                 | Ross .280 | New Springfield, 1906 |
|-----------------|-----------|-----------------------|
| 100 yards.....  | 2.0'      | 2.40'                 |
| 200 yards.....  | 4.1'      | 5.18'                 |
| 300 yards.....  | 6.5'      | 8.26'                 |
| 400 yards.....  | 9.2'      | 11.83'                |
| 500 yards.....  | 12.3'     | 15.90'                |
| 600 yards.....  | 15.7'     | 20.68'                |
| 700 yards.....  | 19.4'     | 26.15'                |
| 800 yards.....  | 23.5'     | 32.50'                |
| 900 yards.....  | 27.9'     | 39.86'                |
| 1000 yards..... | 32.6'     | 48.30'                |
| 1500 yards..... | 72.0'     | 107.26'               |
| 2000 yards..... | 127.0'    | 194.70'               |

Comment on the difference is superfluous except to point out that where the 1906 takes 25 per cent more of an angle at 500 yards, it takes 50 per cent more at 2000 yards to pitch the bullet to the mark, demonstrating clearly that the Ross .280 outranges its rival worse at the long ranges than at the short. This is on account of the greater density of the .280 bullet. It must not be forgotten that as far

as the air resistance is concerned the two bullets are to each other, not as .280 is to .300 but are in proportion as the squares of their diameters, or as 78 is to 90. At equal velocities, this difference is enormous on account of the air resistance, while with the smaller travelling at 3100 foot seconds and the larger speeded up to 2700 foot seconds, there is but little basis for comparison.

Another table might be of interest, this time showing that were it possible to speed the New Springfield bullet up to 3400 foot seconds, it would still be inferior to the .280 at the long ranges. Figures in minutes of angle of elevation required.

| Ross .280 Bullet |                | 30 Caliber, 150 grain |                |
|------------------|----------------|-----------------------|----------------|
| 3000 ft. secs.   | 3150 ft. secs. | Yards                 | 3400 ft. secs. |
| 2.               | 1.8            | 100                   | 1.6            |
| 4.1              | 3.7            | 200                   | 3.3            |
| 6.5              | 5.9            | 300                   | 5.3            |
| 9.2              | 8.4            | 400                   | 7.8            |
| 12.3             | 11.3           | 500                   | 10.8           |
| 15.7             | 14.5           | 600                   | 14.            |
| 19.4             | 17.8           | 700                   | 17.6           |
| 23.5             | 21.7           | 800                   | 21.6           |
| 27.9             | 25.8           | 900                   | 26.            |
| <hr/>            |                |                       | <hr/>          |
| 32.6             | 30.9           | 1000                  | 31.4           |
| 37.9             | 35.4           | 1100                  | 37.8           |
| <hr/>            |                |                       | <hr/>          |
| 44.2             | 41.3           | 1200                  | 45.            |
| 52.4             | 48.3           | 1300                  | 53.9           |

This is worthy of a little attention. It will be noted, that starting with a velocity of 3400 foot seconds a 150 grain bullet .30 inches in caliber outranges—shoots flatter than—the .280 bullet of the same weight and with but 3000 foot seconds, but only up to 1100 yards. The same .30 caliber bullet at 3400 foot seconds outranges the 150 grain .280 caliber bullet at 3150 foot seconds only up to between 800 and 900 yards, when the .280 bullet catches up and requires less elevation for all remaining ranges.

The two .280 bullets are loaded to give the velocities listed, while to speed the .30 caliber bullet to 3400 foot seconds is impossible with our present case. This is an example of how muzzle velocity is offset quickly by sectional density of the bullet and is an example of how comparatively unsatisfactory the swarm of high velocity cartridges now coming out will be unless the bullet density be considered, as well as mere velocity.

The much vaunted Rigby Mauser is an example. The makers claim 3000 foot seconds velocity in the ordinary 7 mm. cartridge with their loading. This sounds fine, as surely a 170 grain 7 mm. bullet will outrange a 150 grain bullet at the same velocity and of the same diameter. The nigger in the wood-pile in this case is that the bullet weighs but 133 grains, being therefore of the same sectional density as the 150 grain bullet in the .30 caliber and we have already shown that such a bullet even at 3400 foot seconds, is outranged by the 150 grain .280 bullet at 3000 foot seconds. Worse than this, Rigby uses axite, a powder so destructive to the bore of the rifle that our manufacturers will have nothing to do with it. The capacity of the 7 mm. case is hardly great enough to give this velocity with nitrocellulose powder.

To get velocity, leaving out all considerations of weight of bullet is child's play. The day of



high velocity is with us. Every month sees some new cartridge on the market with velocities up around 3000 foot seconds. An example is before the writer, a sort of toy cartridge, made by A. O. Neidner, No. 1 Beacon Street, Malden, Massachusetts. This uses a bullet of 60 grains weight, copper jacketed, soft lead point of a short Spitzer type of point and is .22 caliber, calibrating .224 inches. This is loaded into the rifle separate from the cartridge, and the accuracy obtained with the little bullet at its velocity of 3000 foot seconds is wonderful. The shell is a 32-40 necked down to .22 caliber. The load consists of 19 grains of lightning for target and up to 25 grains for game shooting. This load in the 32-40 cartridge gives a very large air space. The maker claims very fine results up to 600 yards, using the shell as a bullet seater and putting an olio wad, with a layer of oilbag and another olio wad on top to hold in the oilbag. This little bullet has driven through  $\frac{3}{4}$  inch of steel plate. The maker shows repeated groups at 100 yards with ten shots inside a circle the size of a twenty-five-cent piece.

This is but the fore-runner of many others of this class but it is of course not to be considered seriously either for game or for military work, although it will be an excellent cartridge for small game and target work.

The Ross .280 cartridge has been recognized by the British war office as one of the few standard military cartridges of the world. The new Text Book of Small Arms, a publication for the benefit of English army officers, gives the mathematics of four cartridges in addition to their own .303, as a basis of comparison. They are the German 8 mm. muzzle velocity 2880 foot seconds, mid-range height at 1000 yards 13 feet. The French new cartridge, mid-range height 14 feet, the United States mid-range height the same, and the Ross .280, mid-range height at 1000 yards 8.8 feet.

Thus the Ross, by evidence of the text book of the most hide-bound war office in the world, takes its place among the few modern military cartridges and clearly outclasses any of them by the figures given.

It is hardly necessary to go further into the merits of the cartridge from a literary standpoint. Its merits for target shooting are amply proven by the records at Bisley. If accurate—as we know it to be—one does not need much proof to see that a bullet that takes less elevation than the 1906 cartridge by 20 per cent at the shortest ranges and less elevation by 33 per cent at the longer ranges, must be less sensitive to wind than the other and therefore more satisfactory all round.

Its merits as a sporting cartridge, through its flat trajectory, have been gone into. As regards its killing power, note that Chas. Lancaster, the well known and conservative gun maker of London has turned out three new types of rifles for this cartridge besides handling the Ross as well. He lists double rifles up to 90 pounds, falling block rifles worth 25 pounds, and a rifle of Mauser action of the same price, all for this .280 cartridge.

In addition to this, Westley Richards, another standard English gun maker, makes all three types of rifles for this cartridge and advertises it highly.

It is probable that both makers are trading on the high reputation of this cartridge—and quietly having some factory underload it for their particu-

lar arms as neither the ordinary Mauser nor the double rifle are adapted to handle so powerful and large a cartridge.

Chas. Lancaster prints among the letters received on the .280 cartridge:—

"The new .280 smooth oval bore rifle is very satisfactory. I have shot 15 stags from 100 to 250 yards and *lost none*."

From British East Africa. "I write you to let you know what an unqualified success the .280 sporting rifle you sent me has. I have killed almost everything with it from elephant down. The effect of the enormous energy stored up in the tiny projectile on antelope at long ranges is astonishing."

From India. . . . "The second ghooral—Indian chamois—was standing on a rock about 400 feet below me and 400 yards away, aimed just over the animal and fired, hit in the shoulder, dropped dead."

The high velocity seems to be overturning the previously accepted ideas that a big heavy bullet of low velocity was a more killing projectile than the small bullet at greater speed. Witness Roosevelt's experience with the full jacketed New Springfield bullet, dropping one beast as large as a bull at 500 yards and killing a hippo with the little bullet.

The new copper tube bullet is new and apparently the best game bullet yet produced. It is so new that the United States patents on this bullet are dated within the last eight months.

The doubter, who thinks that the .280 bullet does not deliver any energy, is invited to try one at his first opportunity on a steel plate in comparison with a .45-70 and a .30-40, and note the size of the indentation or of the hole made in the plate.

A peculiar feature of the Ross .280 cartridges is that the bullet is .002 inches *smaller* than the size of the barrel to the bottom of the grooves. In other words, it is like shooting a .306-inch bullet in a .308-inch rifle, such as our New Springfield. This is a combination that we always have believed would give inaccurate results and a string of other evils from gas cutting down to ingrowing mothers-in-law. Yet with the long life of the Ross barrel, its wonderful accuracy, its freedom from metal fouling, where our New Springfield chokes up with it sufficiently to burst the barrel in some instances, well authenticated, and the experiments of Dr. Mann, we have plenty of food for thought. It occurs about this time to many of us that perhaps we have believed many things that we didn't know. One thing we do know is that the Ross has a life as long as the New Springfield, if not more, it does not metal foul, does not gas cut and worse and more of it, some of the greatest long range matches at Bisley were won with a rifle fired over 2,000 times—which, according to our present ideas should just about be able to hit the general landscape. Facts are hard things to get round, and in view of the Ross and of the the exhaustive experiments of Dr. Mann, proving that bullets do upset and that the metal patched bullet that just fits the tops of the lands is more accurate than the same bullet fitting to the bottoms of the grooves, it begins to look as though we were to rid our minds of much guesswork "knowledge" as to the fit of metal patched bullets.

The writer has before him a .280 bullet made of 95 per cent copper and 5 per cent zinc, no lead being used in its construction. This calibrates a



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full .289-inch, the diameter of the barrel to the bottom of the lands. Before firing it was a scant .287 inches, the size of the factory bullets for the .280 cartridge. Evidently some upsetting.

Progress in military cartridges has temporarily stopped at 3000 foot seconds velocity, combined with enough weight to give the bullet reasonable ranging power. Perhaps it would be well to say that progress has not even halted, the mere marking time being a nearer figure of speech. The shooting ahead of other cartridges, giving higher velocity, cannot be considered as progress when the gain is at the expense of bullet density or of decrease in diameter to the stage of inefficiency in shocking power with full metal patched bullets. The .280 cartridge is already loaded to give a velocity of 3350 foot seconds, but the bullet is cut down to 129 grains in weight.

We believed that 2000 foot seconds was about the limit. We know now that 3000 foot seconds does not mark the limit of the velocity of the future military cartridge. The next step will be to the boat-shaped bullet with its base nearly as sharp as its point. Then, with our steadily improving powders and steel, a 4000 foot second velocity and a military point blank range of a mile.

This, or the discovery of some weapon beside which the powers of the firearm seem futile in comparison. We will see one or the other before many years.

I believe that this article is complete enough to demonstrate the error of Mr. R. L. Glasgow in the

May Outer's Book, in stating that the Ross is inferior to the 1906 cartridge in that the bullet falls off too rapidly at ranges over 500 yards, and that the rifle itself is too heavy. I would be pleased to hear how the gentleman figures that a 150 grain bullet of .280 diameter and sharper point than the 1906 and with 3100 foot seconds, will fall off faster at longer ranges than a bullet of the same weight, .30 inches in caliber at 2700 foot seconds. Also as the Sauer-Mauser ranges from 6½ pounds to 7½ pounds, and the Ross is to be had as light as 6 pounds 12 ounces, it is hard to see where the additional weight of the Ross over the Mauser comes in. I likewise fail to find where in the Sauer-Mauser is "easier handling," than the Ross—unless Mr. Glasgow still refers to the supposed greater weight of the Canuck gun.

I am interested to find that Mr. Glasgow is the original champion of the Sauer-Mauser for the 1906 cartridge, as per his statement in the May issue. Inasmuch as I expressed a Model of 1906 cartridge, some extra bullets and cases and some drawings of the New Springfield to Sauer & Son, about a year ago with a request for the Sauer-Mauser to take this cartridge, I might successfully dispute his claim, but he is entirely welcome to the honor—I have found something still better.

However, I agree with him on the desirability of the Sauer for the 1906 cartridge—it would be almost as good as my sporting New Springfield just finished—and which in its turn is almost as good as the Ross .280.

## WHAT A WOMAN KNOWS ABOUT A RIFLE

By MRS. B. R. BUFFHAM

NEW MEXICO, some consider, would be one of the last places to look for gun experts.

The guns brought here from many states by visiting sportsmen would be unsalable. Some of these sportsmen have seen Monte Carlo and have handled guns at the Hurlingham Club. Much has been printed in sportsman's journals about rifles so perhaps some would like to hear more about shot guns. English made guns are the highest in price but they are miserable failures as made for American trade, being but poor copies of the most popular American models. Englishmen are very poor imitators. Nowhere can a good English gun be purchased except in London as all are finished there. Belgium guns are much better as the Belgians had for many years been copying the best London guns and are very successful. I have handled many of these guns and been very much surprised to find they were Dutchmen. Yes our American guns are the best in the world for the great mass of

shooters and the price at which they are sold, shooting better than any other. Our guns find a ready sale in any market and can be engraved by artists. However they cannot lose the individuality which stamps them as machine made guns. I have just learned how to recognize a good killing gun. I find in hunting rabbits some guns are more deadly than others. I tried these guns on heavy paper targets and found the killers made rough large holes in the paper, while the poor guns made a small round hole. One of the poorest shooters was an Anglo American ejector, finished in London, which no doubt cost hundreds of dollars. The best killer was an Ithaca pigeon gun. Very close to it was a Remington auto-loading gun. It shot very hard and with the heavy loads did not kick as hard as the double guns. Sometime I will tell you why an army musket will kill a beef at four thousands yards but will not kill a sheep at one hundred in New Mexico.



# THE LEE STRAIGHT PULL RIFLE

By CHARLES NEWTON

THE American public is at present in a condition of beginning to sit up and take notice of the different types of action used in sporting rifles.

Until the issue of the Krag to the National Guard the orthodox method of actuating a repeating sporting rifle was by means of a finger lever underneath, and this method has many advantages and some disadvantages. The different bolt action rifles which had been on the market were so much of an innovation, and so decidedly more awkward of manipulation, particularly in the hands of one not accustomed to their use, that they one and all met with a rather frigid reception, the average purchaser, if he paid them any attention at all, merely working the bolt back and forth a few times, then handing them back and purchasing a lever action rifle.

However, the use of the Krag and later the New Springfield by the National Guard, and the introduction of the foreign bolt action rifles has so familiarized many of our sportsmen with that type of rifles, thus overcoming, through familiarity with its use, some of the awkwardness of operation and emphasizing some of its good qualities, that the question of the type of action to be used for a sporting rifle is not only not settled but is becoming more widely open every day.

In the development of rifles and ammunition, proceeding, as it does, step by step, it is but natural that at times the steps should fail to be well timed and some good ideas should be developed in close connection with others of less merit and, both being practically bound together in development, the good should be condemned as failures when under different conditions they might be successful. And as a possible victim of improper association and application we may find the Lee Straight Pull rifle.

The position of this rifle in history is fairly well fixed, well up toward the head in the list of failures, and it is the purpose of this article to discuss the reason for its occupying this position.

From the standpoint of ease and rapidity of operation to the capacity of the magazine there can be no question but that the straight pull rifle is the superior of any of the types in which the bolt is rotated by the direct movement of the hand of the operator, and the principal argument against the bolt system of the Lee Straight Pull is that it does not have locking lugs at the front end, and these are deemed indispensable at the present time. But the question arises as to how indispensable they actually are and whether we may not advantageously sacrifice a little of the theoretical strength of this feature in exchange for the practical advantage of greater ease and speed of manipulation of the straight pull system when using the absolute simplicity of construction and operation of the Lee type.

The greatest objections to the Lee Straight Pull rifle arose solely from the cartridge used in it. It was made, so far as the writer has been able to ascertain, only for the 6 mm. Navy cartridge and a more monumental failure than this cartridge, as it was issued, proved to be, does not exist in the history of American firearms.

The intent of the Navy Department in designing this cartridge, which was fully worked out before any attempt was made toward finding an action in which to use it, was to obtain the maximum velocity with the minimum weight, and accuracy at long range was not considered to be of great importance.

The result was a cartridge of very small caliber using a terrific charge of powder giving a normal service pressure of about 60,000 pounds per square inch in obtaining a muzzle velocity of 2,500 feet per second, but this was later cut down to a pressure of 50,000 pound per square inch, thus lowering the velocity to 2,400 feet per second. This cartridge was developed at a time when the best powders available were far inferior to our old friend W. A. particularly in regard to the breech pressure developed in obtaining a given velocity.

Even the W. A. powder burns completely under a pressure of 40,000 pounds, consequently the effect of running the pressure up to 60,000 or even to 50,000 pounds with this powder must inevitably result in the powder being all burned long before the bullet reached the muzzle, therefore the ballistic efficiency was far below what it should have been in proportion to the breech pressure developed, had a slower burning powder been used.

Were these cartridges loaded with our pyrocellulose or 1908 military powder, or better still the present 1909 military graphited powder, which are adapted to burn completely under a pressure of not less than about 45,000 pounds per square inch far better ballistic results could have been obtained with 45,000 to 50,000 pounds chamber pressure than were obtained with a pressure of 50,000 to 60,000 pounds. Tests show that this cartridge, which formerly required 60,000 pounds pressure to develop 2,500 feet per second velocity will, when loaded with 36 grains Dupont's 1908 Military powder, develop 2,660 feet per second instrumental velocity with a chamber pressure of but 47,500 pounds from which its performance with sufficient of the same powder to give a pressure of 50,000 or 60,000 pounds can be inferred. This velocity being instrumental, the actual muzzle velocity must be considerably over 2,700 feet per second.

Therefore the cartridge itself was sadly handicapped because of the too rapid burning of the powder then in use.

The bullet used was likewise susceptible of great improvement.

It was peremptorily ordained to be of small caliber, yet results which could only be obtained



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with larger calibers were demanded of it. Therefore it must be made of excessive length to give it weight, those first used weighing 135 grains, measuring  $1\frac{1}{4}$  inches in length, although it was later reduced to 112 grains weight with a length of  $1\frac{1}{8}$  inches. This great proportionate length required an abnormally quick twist to keep it steady and the forcing of the bullet through this quick twist absorbed much of the power of the powder charge, heating and wearing the barrel and straining the action unnecessarily.

And even with the high muzzle velocity (2,500 feet per second) the bullet, having an ordinary blunt point, was so light that it was practically "killed" by the air resistance before it reached the

Such was the cartridge, and the only cartridge with which the Lee Straight Pull action was tested, and although it was used in the Navy for five years and through the Spanish-American war the ordnance reports contain not one word of criticism of the action nor do they indicate in any way that it was not amply strong and serviceable, and the rifle was abandoned only because of the decision to adopt a uniform arm for both Army and Navy.

Such being the conditions under which this arm was tested, its position in the sporting world established and its rejection ensured, we may consider somewhat the details of its construction as compared with those bolt actions in which the bolt is rotated in operation.



THE LEE STRAIGHT PULL, U. S. NAVY MODEL

1,000-yard point and was reasonably accurate for but about 700 yards.

Had this cartridge been loaded with sufficient up-to-date slow burning military powder to produce a chamber pressure of 50,000 pounds, which was the service pressure of the New Springfield cartridge until about a year ago, and had a 100-grain Spitzer bullet been used in about a 10-inch twist, the history of this cartridge might have been vastly different.

As illustrating the terrific pressure developed by this cartridge, an examination of the Ordnance office reports shows that the greatest difficulty encountered with it was to get primers which would stand the pressures developed, the primers either being pierced upon discharge, owing to the gas pressure bursting through into the firing pin hole in the breech bolt face, or the gas working out

The bolt of the Lee Straight Pull is a solid block of steel 19-32 inch thick and of the general form of a flat pointed wedge, the smaller end being the bolt head which supports the cartridge head. About  $3\frac{1}{4}$  inches from the bolt head on the lower side is the bearing shoulder formed by cutting away the lower side of the bolt to a depth of about 7-16 inch from the rear end up to this point, and it is this lower portion of the bolt between the bolt head and bearing shoulder which sustains the strain of discharge.

The bolt is actuated by a latch on the right hand side, this latch being practically in the form of a capital L inverted. This L is pivoted to the bolt at the angle and the upright, hanging down, is furnished with a knob at the lower end to be grasped by the hand in operation. The end of the other branch of the L rests in a recess in the receiver



THE LEE STRAIGHT PULL SPORTING RIFLE

around the edges of the primer, scoring away the metal so the primer was left loose in the pocket.

In an effort to ease off the tremendous chamber pressure developed by the use of too quick burning powder in too large charges, the designers were forced to ream out the rifling from the barrel for a distance of  $\frac{3}{8}$  inch in front of the chamber to allow the bullet to move forward thus far without resistance from the rifling, thus practically increasing the chamber capacity to that extent, otherwise a reduction in powder charge was necessary to avoid bursting the weapon. This exaggerated "lead" was in itself a bid for gas cutting and fatal to accurate work and, with the slower burning powder now in use, would be entirely unnecessary.

which acts as the fulcrum of a lever of the second class.

When the action is closed the lower portion of the bolt, being that portion which sustains the thrust of the cartridge upon explosion, rests in a mortise in the center of the receiver, with the bearing shoulder supported by the rear of the receiver.

When this arm was submitted to the Army ordnance board in 1893 it was criticized because the action tended to start open when fired, but this was overcome by placing this bearing shoulder wholly below the center of the bore of the rifle, therefore, as the strain of the explosion comes upon the bolt head, the backward thrust is also downward thus locking the bolt the more tightly



the greater the force exerted upon the front end, yet offering no resistance to opening the action by pulling backward and upward on the knob of the latch. This locking and opening is assisted by the fact that the bearing shoulder of the bolt is convex, from top to bottom, the curve being the arc of a circle having a radius equal to the distance from the bearing shoulder to the bolt head. The supporting shoulder is concaved on the same curve,

In operating the action the knob at the bottom of the latch is grasped and drawn backward also moving, owing to the manner in which it is attached, upward; the forward point of the latch bearing upon its fulcrum in the receiver, the pivot at the angle of the latch first raises the back end of the bolt out of the mortise and then the entire bolt moves back, withdrawing and ejecting the shell. A forward push inserts a new cartridge, the end



ACTION CLOSED

consequently it is impossible for this bearing shoulder to slip up when under strain of firing, but the action of the latch when the knob is drawn back swings up the back end of the bolt upon just the right curve to disengage the bearing shoulder without effort.

Thus while the bolt is locked about  $3\frac{1}{2}$  inches back of the bolt head instead of at the bolt head, yet the locking is symmetrical except for the slight downward thrust and is amply strong for any cartridge in use today, it having successfully withstood a regular service pressure of 60,000 pounds per square inch.

As shown above, it is absolutely impossible for the action to open of itself under strain, since the

of the latch enters its recess and the bolt is forced down into its bed in the receiver and the arm is locked ready for firing. When the arm is fired a projection on the lower side of the firing pin striker moves forward with the striker until it is almost in contact with a projection upon the latch and in such position that unless the action is completely closed the arm cannot be fired as the projection upon the latch prevents the striker reaching the primer until the parts are in proper position and the same arrangement of parts prevents the latch flying open under the jar of the discharge.

It may be argued that the support of the bolt so far to the rear and below the center of the bore would lead to inaccurate shooting, as is sometimes



ACTION OPEN

greater the strain the tighter it is locked, and the only way in which the bolt could escape to the rear would be by breaking the receiver completely through. The right side of the receiver is  $\frac{1}{4}$  inch wide by  $\frac{1}{2}$  inch thick, giving 7-32 square inch of metal on the cross section and the left side is considerably heavier than the right while the rear of the receiver which receives the thrust of the bearing shoulder of the bolt measures 21-32 inch in depth and extends  $\frac{1}{2}$  inch to the rear. When we compare these dimensions with the two locking lugs of the New Springfield, each  $\frac{3}{8}$  inch square, giving a cross section of metal of but 9-32 square inch on both lugs, without excluding the ejector slot through one lug, it is readily seen that there is strength to spare in this action, and the test of actual use in the navy with as trying a cartridge as was ever used in a small bore rifle, showed that this strength was actual as well as theoretical.

charged against the Lee-Speed rifle of England, but the Krag locked with a single lug on the bolt, the bearing of which was considerably outside the line of the periphery of the shell and it made good at the target, while the straight pull has a far more direct rear support to the bolt.

The British service rifle has been roundly criticized on the broad proposition that it does not lock at the front end of the bolt, but the difficulty there is that the receiver is weakened between the cartridge head and the point of support of the bolt by a transverse cut to accommodate the cutoff. Also the bolt is supported by two lugs, one on each side, instead of directly across the rear end. In manufacturing it is very difficult to obtain an equal bearing upon both lugs as a matter of but a few thousandths of an inch is sufficient to make one lug take the strain of the explosion before the other, thus imposing undue strain upon the lug



first bearing (and this is true of the lugs at the front of the bolt of the Mauser) causing the rifle to shoot to either right or left of its true zero and causing it to shoot differently with different bolts. None of these objections can be urged against the Lee Straight Pull action which is locked squarely across the back end and has, as above noted, successfully withstood the strain imposed by using one of the most trying cartridges ever used.

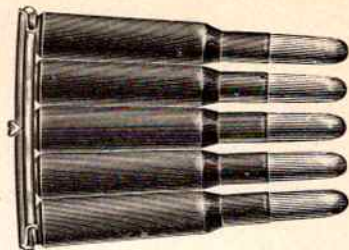
Therefore we think that in case the Lee Straight Pull rifle had been adapted to a better cartridge it would be a popular sporting weapon today and, from the standpoint of a purely sporting rifle, the most desirable action in use today. As a military rifle the Mauser type is superior, owing to its cam seating of the cartridge and extraction of the shell and to the closed magazine, also the clip system, but with a better magazine system the Lee Straight Pull bolt might well hold its own.

This rifle was designed and completed in a very few years, a large quantity was made to use an inferior cartridge, and the whole proposition then dropped. The action itself is susceptible of many improvements, which could easily be made, and if but a fraction of the energy which has been expended on other types had been devoted to improving this rifle, it might today be heading the list of box magazine rifles. Its condemnation has been upon far too broad grounds, most of which applied only to the cartridge.

The Ross rifle, recently described at great length in these columns, seems to be a straight pull rifle with a rotating bolt having locking lugs at the front end and may be an improvement over the Lee, but the cuts published and description given were not, complete as they were, sufficient to convey to the writer an understanding of just how the trick was done and the impression formed was that the Ross bolt was quite complicated and depended, for ease and certainty of functioning, largely upon absolute perfection of both workmanship and condition of rifle. To transform a longitudinal into a rotary movement with ease and certainty usually requires either considerable travel along the straight line in proportion to the rotation accomplished or pretty nearly the elimination of friction. The long travel is an objection in a bolt action, and if the elimination of friction is depended upon, sand, dust or rust may make trouble if the arm be not well kept.

With the Lee action the bolt is the essence of simplicity as far as locking is concerned. It is merely putting a square steel block into a square steel mortise made to fit it and, once in place, all the king's oxen and all the king's men cannot get it out without first lifting the bolt handle. Sand, dust or rust cannot affect it at all and all that any powder charge can accomplish is to break the receiver completely through.

The extractor of the Lee is susceptible of considerable improvement, particularly in the line of having it permanently attached to the bolt when the latter is removed, but this is a minor matter and easily accomplished were a serious effort to be made to produce a sporting rifle upon this type of action.



THE CLIP

Of course in passing judgment upon a rifle action all its points must be taken into consideration. Nearly all rifles have both points of superiority and defects, and the end sought is to obtain the greatest general superiority. In comparing the Lee Straight Pull action with those actions in which the bolt is locked and unlocked by rotation we must concede to them the advantage of cam seating and extraction of the cartridge which is useful in case a cartridge should stick, and not otherwise. How often the cartridges do stick the reader knows as well as the writer. Offsetting this we have the greater speed and ease of manipulation, and this comes in play every time the rifle is loaded and fired.

It may be termed a choice of two evils, or a choice of two advantages, the characterization is immaterial, but in any event the shortcomings of the cartridge should not be charged against the action itself. Unless there should be a call for an action of this type, sufficient to lead to their production for modern sporting cartridges, however, we must take the cartridge also if we take the rifle at all, and it was with a view to submitting the actual merits of this type of action and an improvement in the loading of the cartridge, to sportsmen in general for their opinion that this article was written.

Another reason for the writing of this article is the fact that some time ago the writer expressed through these columns the opinion that the Lee Straight Pull action was a failure because it was defective in strength and certainty of operation. That opinion when expressed was entertained by the writer but was based upon a merely casual examination, together with the opinions of others apparently no better posted, but thereafter, with a view to determining the justice or injustice of those comments, the writer procured one of these rifles and gave it a thorough test and the foregoing opinions are based on the outcome of the actual tests to which the arm was subjected, and since the writer has been guilty of expressing an opinion upon an arm without a thorough knowledge of its construction the least he can do is to acknowledge his error at the first opportunity.

Further, the impression received by the writer as to the supposed weakness of this form of action seems to be quite general and he felt that it might be well to clear this up by a more thorough description of the locking device of the rifle in question than is contained in the catalogues.



# MEMORIES OF A GUN CRANK

By H. W. HARMON

IT is now some five and fifty years since I did my first job in gun repairing, and I look back on it with more of pride and satisfaction than any of the more ambitious efforts of my manhood. Another little urchin, and I had seized the opportunity of our parents' absence for a grand hunt. The arms of our fathers were far too heavy for our feeble strength, and we hired from the village merchant's stock, a little gun listing at \$3.00—*net cash price* \$2.50. They were a staple article in the country store at that time, and known as the "The Three Dollar Gun." A description might interest the young sportsman of today: Barrels, 30 inches; gauge, 30; weight, 4 pounds; stocks, hardwood, painted—red being the prevailing color; percussion locks. Some had checked grips with crude engraving on the guards and hammers. Some had the name "Clark" on the lock plate. Whether he was the maker of the complete gun or only the lock, I do not know. This single gun seemed to be hand made throughout, but how it could be constructed and sold for that sum, crude and rude as it was, passes my understanding. It goes without saying, that they were unreliable and undesirable, frail and ineffective, missing fire being the rule, rather than the exception. After a few hours' shooting we missed the hammer of our fowling piece. That we found, but the screw was forever lost,—unless, perhaps, some future generation may discover it. In our terror we returned to my home for repairs. Only the simplest tools were at my disposal; a file or two, screw driver, hammer, etc. My forge was the open fire place of the old kitchen. With these implements I set out on my task of making a screw that would be so like the original that the change would not be noticed by the shopkeeper. I succeeded, I know not how, and the gun, after due examination, was pronounced uninjured and returned to the stock to our inexpressible joy and relief. I never recall the incident save with a thrill of triumph. I was born a gun crank; none of my earthly possessions have given me any such pleasure as my guns; no sport has been so lasting and so unmingled with regrets as my shooting, and now, as failing strength and dimming eye admonish me that I must soon say good bye forever to the hills, valleys and plains I have so long roamed over, and "hit the trail" for the happy hunting grounds beyond the river, if there is anything in my nearly sixty years experience with fire arms that will give the young sportsman pleasure or profit, it is freely at his service. I cannot recall the time when a beautiful fire arm would not call me from a feast, or awaken a feeling within me that only the true gun lover knows. One of my ancestors in the days of Indian warfare, before the Revolution, won fame and renown as an Indian fighter and scout. Near his old home they still tell tales of his wonderful

skill with the enormous gun he used, which was for many years in the old Boston Museum. Poets have sung of his deeds of skill and daring, and history records the story of his service to his country in those days when the grandest nation of earth was struggling for existence. Mine has been the more peaceful existence, my skill known and praised only as seen in the partial posterial eyes of lore and friendship, but it has been sufficient to me. In these long years of study and use I have become acquainted with more kinds of arms than I could describe in any article that would be suited to a magazine of today, or afford pleasure or profit to anyone not gun crazy like the author. The old men of my earliest recollection used flint lock guns, the "Queen Anne" type. They antedated the Revolution and were the favorite arm of that war of both the colonists and English troop. (The Hessians used a different arm). They had tried them out in the French and Indian wars and the sons of those veterans of the Revolution were still using them with the unfaltering faith of their fathers when I was a boy. They called them the "Queen's Arm." Their large bore, 80-100, of an inch, made them well fitted for large shot, while the bullets were projectiles not to be despised by man or beast. Their barrel's length, 42 inches, with the slow burning powder of that day, gave good penetration, but their weight, 10½ pounds, made them clumsy weapons for wing shooting, and their accuracy with bullets has been, I believe, very much overrated. The absence of sights (save a slight groove that some cut in barrels), and many other reasons would indicate against such stories as have been told of their wonderful work in the hands of our pioneers. There was also in use a flint lock fowling piece, 20 gauge, same length of barrel. These arms were light weight, had iron ramrods for driving down balls when used for any purpose requiring such ammunition. They were the favorite weapons of the scouts and rangers on long trips in pursuit of Indians, or the game hunted in those early days. Then came imported double guns with flint locks that in many points have never been excelled, very expensive but marvels of the gunmaker's art. I regret I do not have a specimen in my collection. Those I recollect were small gauge, about 20 I should say, very light, with rather short stocks and strong drop, and their balance a "dream of delight." I presume the advent of the percussion lock in England and France sent these beautiful weapons here, as their price, when in fashion, must have been prohibitive to the American sportsman of those days. The percussion lock, single barrel of 16-14-11 bore, with shorter barrels, light weight, relegated the heavy flint locks to the rear. These last were succeeded by double guns of 30 to 36-inch barrels,



moderate bores, and were the standard of excellence in shotguns for many years.

The guns of fine workmanship must have been mostly imported. I cannot now recall an American maker of wide reputation of that period. Then, with slow, hesitating steps, came the breech loader. The general shooting public were not yet prepared for the change and were afraid of the systems of locking then in use, and declared the guns of moderate price unsafe, and the higher grades too expensive for the masses. The American makers solved the problem by making single barrelled breech locking guns of unquestioned strength and reliability and gained the confidence of the multitude. By this time the French and English makers had so improved the breech loading double gun that the American makers started in a small way to supply the demand created, little dreaming it was to reach such colossal proportions. The great problem confronting them was to select or invent a fastening that would be safe, durable, convenient and of graceful lines.

Passing the earlier locking systems of the French and English makers, some of them of much merit, we will briefly notice those adopted by the first American makers. The Parker, always a well made and strong shooting gun, used the old lifter action, the lift-lever being in front of the guard. The large sale and popularity it achieved is a tribute to the excellence of its workmanship and its superb shooting qualities against this handicap. The Remington top lifter was more graceful, was well made, but not satisfactory to shooters generally. The Allen, with fixed barrels, did not meet with approval. Then came the "Fox," made by the American Arms Company. The excellence of its shooting qualities was unquestioned, and some of those patterns made with brass shells (for which they were usually chambered and bored) have rarely been equalled by the gun makers of any country. The side or swing action of the barrels

was, when once understood, very convenient, the sliding push button the most graceful of all the devices for operating the bolt that have been designed, but the opposition of all the tip up gun makers and dealers. The difficulty of making a light gun of that pattern, and the perfect workmanship required for the fittings, greatly enhanced the cost and so one of the finest guns of America was passed by and is little more than a memory and a remnant of American inventive genius. The side lever action, so convenient and swift, had defects and no maker seemed to have the action that suited him or his customers till the Scott top snap action was invented. Why every gun maker did not at once adopt it is a mystery in gunmaking only equalled by the United States going on in the making and using muzzle loading rifles during the civil war, when they had tried out the Sharpe's, Burnside and other breech loaders. It was adopted rather slowly, but it took its place at the head of the line and has always maintained it. It made the supremacy of the breech loader at once apparent. The day of the muzzle loader was past and the American mechanics fully realizing it began to make guns that disputed the claims of European supremacy so long conceded. They have made a host of improvements of the greatest utility and thoroughly solved the problem of making a good and reliable gun for a moderate price. If we compare the new models of our best makers with those of the European gunsmiths we shall have no cause to blush for our own. Compare the locks and locking action of 1909 Ithaca, the Baker safeties, etc., etc. If we compare the shooting qualities of our standard guns with those of the worlds best we shall be satisfied. That we have reached perfection I would not claim nor that we have distanced European makers, but we have won an honorable place in the race within a few years and one that we shall maintain against all comers and *my* money is on and for them.

## GUNS FOR WOMEN

By W. L. COLVILLE (Dick Swiveller)

THE 20-bore is supposed to be the ideal gun for a woman to use who is learning how to shoot, because it is light to handle, the loads small and it is supposed the recoil is less. This is all a mistake. Guns of 20-gauge are bought for women from the stocks in the stores, usually without regard to length of stock, drop or height of comb, losing sight of the fact that the average length of a woman's arm and neck is so very much shorter than a man's, necessitating a length of stock from 10 to 12 inches, drop  $1\frac{1}{2}$ ,  $1\frac{1}{4}$  to  $2\frac{1}{4}$  or  $2\frac{1}{2}$  inches, with a height of comb  $1\frac{1}{4}$  to 2 inches. The average guns kept in stock are usually 14,  $14\frac{1}{4}$  to  $14\frac{1}{2}$ , 21, 3 to  $3\frac{1}{2}$ ,  $1\frac{1}{2}$ ,  $1\frac{1}{4}$  and 2-inch. It is manifest that none of these

dimensions are suitable for a woman of the average build and figure, and meet requirements only in very exceptional cases. It is, therefore, highly necessary that the lady should be measured and the stock made to order. The novice, in the first attempt to handle a gun, light or heavy weight, with a 14 or  $14\frac{1}{2}$ -inch stock, usually receives most of the recoil on the margin of the shoulder and the muscles of the arm, caused by the slipping of the long stock outward and downward at the instant of discharge, the short arm reach being helpless to hold the gun steadily and firmly to the shoulder. This causes a bruised arm and shoulder and lays the foundation of timidity, flinching and general lack of confidence,



all of which it often takes years to eradicate. This can be avoided by introducing proper methods in the beginning and gradually open the eyes of the student to the delightful pastime and sport of shooting afield or at the trap.

A woman's flesh is soft and the muscles lack strength to overcome this in conjunction with handling the gun in first lessons. It is most excellent exercise to use two-pound iron (not wood) dumbbells three times daily for five minutes each time. Keep at this persistently. It strengthens the neck, arms, back and limbs and increases the hand grip to a greater certainty. Continue this exercise two to three times a day, seven days in the week and three hundred and sixty-five days in the year.

The beginner should be fitted with a 12-gauge, 26 or 28-inch barrels, weight  $6\frac{1}{2}$  to  $7\frac{1}{4}$  pounds, one barrel plain cylinder, one full choke. A Silver's recoil pad should be substituted for the ordinary butt plate.

The first lesson is to teach the novice how to hold and aim the gun, sighting some object in the room on a level with the eye. Keep the gun limbered up and in some handy place; practice this holding and aiming incessantly until the gun comes smoothly and quickly to the shoulder, and the sight falls easily and surely on the object aimed at. When this has been accomplished, all without pulling the triggers, then dummy shells can be introduced, the holding and aiming continued, with the addition of drawing the trigger of one barrel as the sight comes on the object. This work brings steadiness and the practice should be continued until every vestige of flinching and fear has disappeared, the student handling the gun easily and surely and pulling the trigger with smooth and quick deliberation. The next step is to snap primers under conditions as noted, the student becoming accustomed to this without fear or nervousness. The next step is to introduce light loads, fired at a stationary object twenty-five to thirty-five yards distant. It is helpful if the object is empty bottles or Blue Rock targets, the latter preferred, as it encourages and pleases the tyro to see them fly to pieces, proving good aim. This practice continued until the lady becomes fairly expert, the Blue Rocks should then be suspended from a string or wire, shoulder high, and vibrated three or four feet, the student standing twenty-five to thirty yards rise, using the cylinder barrel. This is the first lesson on moving objects. The vibrations should be increased as the student grows expert. Finally, the rise should be thirty-five to forty yards and the choke barrels used, passing through the same lessons as with the cylinder barrels. The next step is to provide one expert trap, targets thrown very slow and straightaway, the shooter standing twelve to fourteen yards rise and later sixteen yards. In the early practice on the flying target, if there is a latent nervousness or overanxiety on the part of the student, it will be sure to develop here. This is caused by the desire to "get on" to that flying disc quick, very quick, and, not being able to do so,

or successful in doing so, causes a flutter of the nerves and consequent unsteadiness. Care at this stage of the education should be taken to eliminate this. If this state of "nerves" grows, then the student should go back to the vibrating Blue Rock until coolness and steadiness return; then in time the lady can face the traps and regular flights of targets, and is to a great extent fitted for field shooting in so far as handling the gun is concerned, the further experience being coolness and deliberateness in the presence of game. Cultivate a natural, careful handling of the gun, that the lives of others shall not be endangered, and an observance of those rules of courtesy and amenity that govern the actions of sportsmen in company afield.

The question naturally arises, why should the woman learning to shoot begin with a 12-gauge gun weighing  $6\frac{1}{2}$  to  $7\frac{1}{4}$  pounds? The advantage is, it accustoms her to handling this weight, as being about the weight,  $6\frac{1}{2}$  pounds, she will use in the field, and  $7\frac{1}{4}$  to possibly  $7\frac{1}{2}$  of 7.10, at the trap. In the house practice, also in early lessons, the 12-gauge of  $6\frac{1}{2}$  to  $7\frac{1}{4}$  pounds comes up steadier to the shoulder and stays there easier and more pronounced than a lighter weight gun in 16 or 20-gauge, for instance. Another advantage, during the lessons in shooting, the loads used in the 12-gauge will not be felt to a perceptible degree in recoil, thereby still further gaining and establishing confidence.

After the student has become thoroughly familiar with the 12-gauge, in its weights from  $6\frac{1}{2}$ ,  $7\frac{1}{4}$  to  $7\frac{1}{2}$  pounds, with the standard loads, then the smaller gauges, 16 or 20, can be introduced.

In the early lessons I would suggest loads of  $2\frac{1}{2}$  drams (31 grains) bulk smokeless, one ounce of No. 8 chilled shot. Later the load can be increased to  $2\frac{1}{2}$  drams and one ounce, or  $2\frac{3}{4}$  (34 grains) and  $1\frac{1}{8}$  ounces of No. 8, until the regular trap load can be handled in the proper weight gun.

If field shooting is to be indulged in exclusively, I would advise a 12-gauge, 26-inch gun, of  $6\frac{1}{2}$  to 6.10, for a season or two, at least, and later try a 16, 26, 6 to  $6\frac{1}{2}$ . The 20-gauge should be left out unless the lady becomes very expert. I think the average woman will do better work with the light 12 or 16-gauge. Referring to fit of stock once more, in measuring a woman it must be remembered that her head is not as large and the distance through from cheek to cheek is much less than the average man, consequently the stock should be cut and shaped much thicker through where the cheek rests, to enable the eye to align straight along the center of the rib from breech to muzzle. If it is found in shaping the stock thick to fit that it looks and feels combersome, it can be shaped slightly thicker than the usual dimensions on most all makes of guns, and "cast in"  $\frac{1}{4}$  to  $\frac{3}{8}$  inch, more or less, thus bringing the eye to the left and to the center of the rib. If, on the other hand, the face is large and full, it may be necessary to shape the stock with a "cast out" of  $\frac{1}{4}$  or  $\frac{3}{8}$  inch.—*American Field* August 7, 1909.



# THE NEW VICKERS-MAXIM SIGHTS

By THE GUNNER

SOME time since, the writer had an opportunity to inspect a set of these new aiming media applied to a Ross rifle, caliber .303, British.

The system of alignment followed in these sights has been known to our target shooters for some time, viz.: peep rear sight and aperture front sight. However, in the application of this system of alignment in the Vickers-Maxim sights, the relation of the sizes of the rear sight peep, the front sight aperture and outside diameter and the target is so worked out as to secure a fairly accurate approximation of the range.

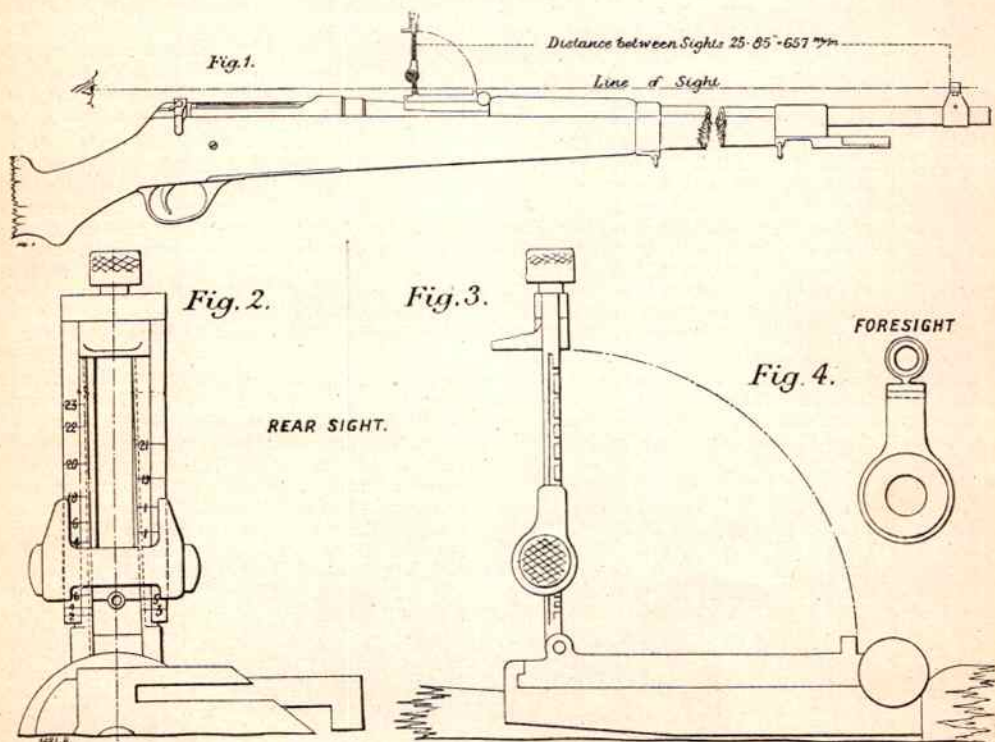
The application of these sights to military work is the conception of Capt. Antonio Calichiopulo, R. A., Italian army. The system has been developed by Mr. J. Taylor Peddie, lately a lieutenant in the London Rifle Brigade.

Sir Trevor Dawson is personally superintending the practical application of this system to military rifles and machine guns, at Vickers' Sons and Maxims'.

The rear sight (figures 2, 3 and 5) is a folding leaf with drift slide and suitable elevating and

windage adjustments, much resembling our New Springfield Model 1905 sight, with the addition of an adjusting screw and vernier for elevation. The drift slide has only a small circular aperture, or peep, without the field view and notches of the Model 1905 sight. One side of the leaf and slide is arranged to read, with vernier, to single minutes of sighting angle while the other side is marked in yards of range. The diameter of the aperture in the drift slide is proportionate to the outside diameter of the front sight tube and the sighting radius, i. e.: distance between front and rear sights. This aperture diameter is so sized as to leave a ring of light between the outside of foresight and inside of rear peep. For battle sight, with the leaf laid down, there is a transverse rib, set across the front (or, when raised, upper) end of the leaf, with a peep aperture through it. This peep is drilled through the rib at such a height as to give the proper elevation for battle sight, in much the same manner as the open notch in the Model 1905 battle sight.

Experiments are being conducted to determine if there is sufficient advantage in mounting the rear





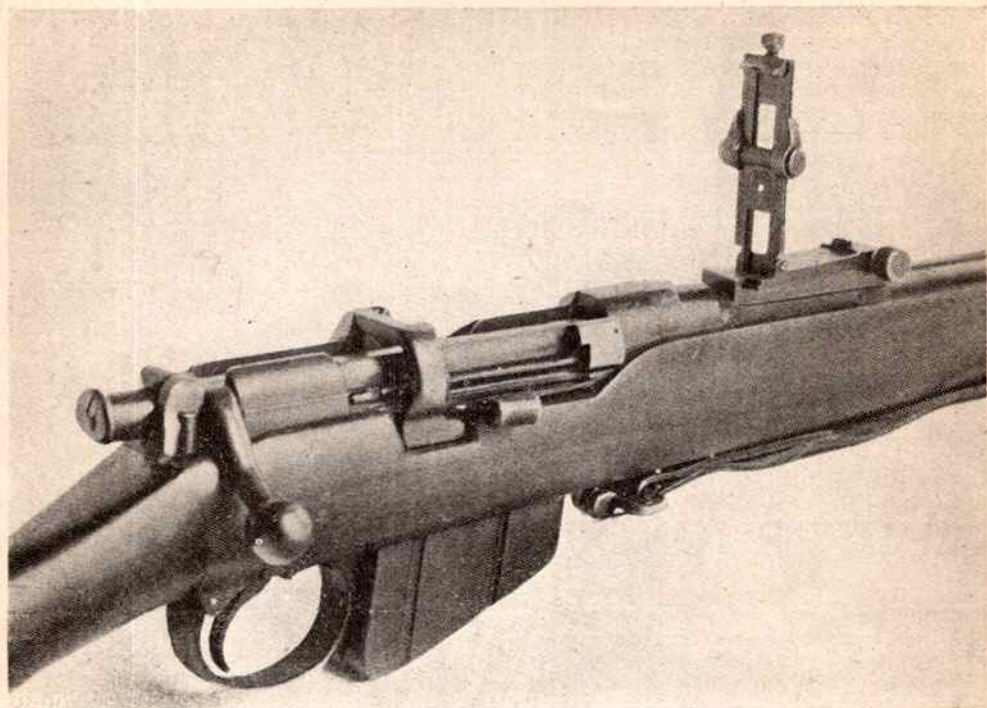


FIGURE 5

sight on the small of the stock to offset the trouble of the necessary change in the arms. Military opinion is partial to the barrel mount, while theory would indicate the superiority of the stock mounting, owing to increased sighting radius.

The front sight (figures 4 and 6) consists essentially of a tube with suitable base for attachment to the barrel. The internal diameter of this tube (the size of the aperture) may be from 5-32 inch to 15-64 inch, experience having shown that the 5-32 inch aperture gives a field of ample size, with excellent illumination, into which there is no difficulty in centering the target. The external diameter, being, as aforesaid, proportionate to the size of rear peep and sighting radius, is sufficient to allow of enough metal being used to insure strength necessary for use in military service.

The proper relation of sizes of peep and front sight ring with sighting radius and range insures a clear view of the target surrounded by a ring of light, with an unobstructed field and natural illumination. This should prove a long step ahead of the common front sight, which sticks up like a sore thumb and cuts off considerable of the field. The whole focus and optical strength of the shooter's eye is, in this improved system, given to the target.

With a front sight having an aperture 5-32 inch in diameter, at 1000 yards range there is a field of view embraced of about 15 feet, when used on a British service rifle. As any target—for instance, a man—occupies a space proportionate to the range, when seen through the apertures, this

affords a means of estimating the distance closer than the average shooter could guess.

After a somewhat lengthy test, at ranges of from 100 to 1,200 yards, of this system of sights applied to a New Springfield, the writer personally believes that it marks a step in advance of the peep rear and barleycorn or bar front sights. The bull can be "found" quicker and there is noticeably less eye-strain in aiming. The improvement is

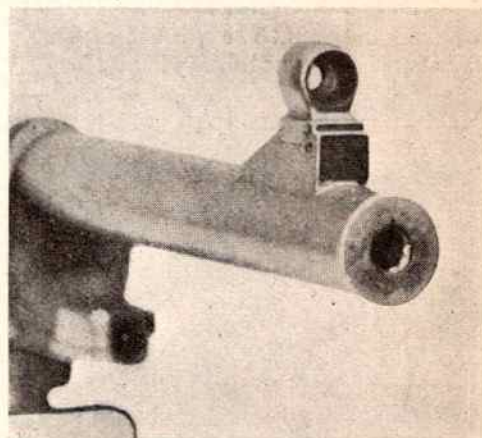
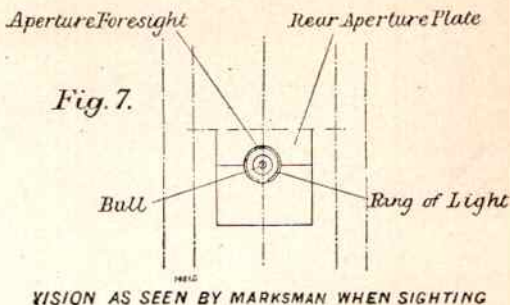


FIGURE 6



even more noticeable when shooting at natural objects in a common landscape than it is on the range. The sights have not the tendency to blur and there is not the merging of front sight into certain colored objects which is so troublesome with the common front sight. The definition is clear under all conditions.

The writer would like to hear from some of the shooting fraternity who have opportunity to apply and test sights of this pattern on their arms. He thinks they will all admit after the tests that the Peddie-Calichiopoulo system has everything except the telescope, beaten.



## WHERE IGNORANCE IS BLISS, ETC.

WE have in Ottumwa, Iowa, a subscriber who would not now be thrust into the limelight of publicity if he had been a little less modest, or a little less benighted. If his modesty had not impelled him to withhold his name we would have written him a nice, kindly, fatherly sort of a letter to pierce his ignorance as painlessly as possible, but we haven't his name, and a sense of duty compels us to enlighten him, even at the cost of holding him up to public ridicule, since ignorance so dense ought to be pierced at any cost.

In the June issue we printed a series of pictures showing Mr. and Mrs. Topperwein in some of their marvelous shooting performances, and one picture displayed Mr. Topperwein breaking pieces of coal with a revolver, from an automobile going twenty miles an hour. Our benighted friend saw that in this picture the car appeared to be standing still, every spoke of the wheel being plainly visible, and, forgetting that a little knowledge is a dangerous thing, he jumped, instantaneously, to the conclusion that he had caught us redhanded in the act of shamelessly deceiving the public. To show us that we were caught with the goods upon us, as it were, he tore out the offending picture, and in typewriter wrote upon it the following terse, vigorous, and illuminating comment: "Notice the spokes of the rapidly moving car. O, you liars!" and to rub it in, he wrote the "O you liars!" in red, which was the straw that broke the camel's back. To his mind evidently, the proof of our guilt was conclusive.

If our benighted friend had been a reader of the Outer's Book in 1907—which he was not, else he would not now be so benighted—he would have seen in the January number of that year, several pictures of bullets shot from a Mauser rifle, with a velocity of 2000 feet per second, traveling through the air at that rate when the photographs were taken. Compare that speed with Mr. Topperwein's auto running at twenty miles an hour.

While the auto was going one mile, the bullet would go 66 miles, yet the camera caught it. The Ottumwa gentlemen should remember that light travels at about the rate of 185,000 miles per second, in the face of which inconceivable speed, the swiftest thing that man can create, stands absolutely still, and it is all up to the camera. With a lens rapid enough, and a plate sufficiently sensitive, there is no limit to the speed which may be overcome by the camera. Scientists have caught light rays far too swift for the human eye, and, as in the case of the bullets above mentioned, even amateurs have photographed things which we can not see. In photographing the bullet from the Mauser, the operator had to determine the fraction of time in which the bullet would be standing practically still. A simple mathematical calculation showed him that in .0000013 of a second the bullet would move but one-thirty-seconds of an inch, which, in comparison to the bullet's length of about  $1\frac{1}{4}$  inches, made that slight motion a negligible quantity so far as the plate was concerned. He therefore gave his camera an exposure of .0000013 of a second, by aid of an electric spark, and he caught pictures of the bullet unblurred by motion. Compared to that work, the photographing of Mr. Topperwein's auto was a very simple and easy performance. It is not likely that the exposure had to be even so short as .001 of a second. In fact, almost any high grade camera, such as the experienced amateur carries, will catch the spokes of an automobile traveling twenty miles an hour, and considerably faster than that.

Perhaps the intelligent reader will consider this devoting altogether too much space to the enlightenment of a single individual, even though he be a valued subscriber, but it is barely possible that in other places there may be men of the same type of mind, who will think that we are trying to deceive them, and this little explanation is intended for their benefit as well as that of our esteemed Ottumwa friend.



# THE .45 NEW SERVICE

By MAURICE H. DECKER

NO shooter can call himself a full fledged gun artist until he has mastered and can effectively handle the .45 or .44-40 revolver. The glamour which surrounds the large caliber six-shooter because of its frontier performance in the early settlement days, is very alluring in the eyes of the youthful enthusiast and uninitiated shooter, who occasionally commit the mistake of starting in on revolver training with one of these weapons. In such cases, a worthy recruit is lost to the none too ample ranks of the shooting fraternity and a brand new .45 gun is thrown upon the market for sale at half-price. The .45 or .44-40 caliber is no beginner's gun or ladies weapon, and the safest and most comfortable way for embryo revolver shooters to work up as a good pistol shot, is to start in with the .38 or .32-20 calibers. This latter size is especially valuable for this purpose, for it gives the maximum range with the minimum recoil, and possesses a velocity similar to that of the .45.

Some little difficulty attends the choosing of a high power revolver by the unexperienced. There are the questions of caliber, model and length of barrel for the novice to consider and decide in a satisfactory manner, for as sure as he jumps at conclusions and at one certain combination, and selects it, so sure is he apt to be dissatisfied with his choice and imagine all the other available styles as being better suited to his requirements. Indeed, I have learned by experience that the only way to be perfectly satisfied is to possess them all. If you are determined to go the limit and possess a real man's gun, the choice of caliber narrows down to the two popular sizes of .44-40 and .45 Colts. In my opinion, the latter represents the most that is desirable and best suited to the modern shooter. For strictly frontier work, I admit, the .44-40 has its advantages, but as the .44-40 Winchesters are no longer in universal use among frontiersmen and big game hunters, and there are few localities whose conditions demand the genuine old-fashioned frontier gun, the superior features of the .45 overbalances the single advantage of the .44-40, viz.: its ready obtainability in all parts of the world. While the .44-40 is slightly the superior in range and trajectory, these points lose weight when you consider the fact that a revolver is seldom used at distances of over 50 yards. No sane person now-a-days expects the six-shooters to do the work of a big game rifle and one that is accurate and requires little elevation up to 50 yards is capable of performing all that is required of a one-hand arm. With a revolver in realistic work, your purpose is to kill your enemy and "kill 'em quick," and in this particular the "peacemaker" leads them all. As a supplementary arm to a big game rifle the .45 is preferable because of its superior energy and stopping power. No revolver made can equal it today, and no pistol, automatic or otherwise, has an equal amount of striking force, unless it was the old Remington .50 caliber single shot pistol with eight-inch barrel.

Besides this, the question of accuracy must be taken into consideration. The shooter now-a-days

wants a gun that he can use for target work as well as field service, one that will make a fair showing when used with other target arms. Nothing much to speak of can be said favorable to the accuracy of the larger rifle cartridges adapted to revolvers. The .32 W. C. F. is capable of good, close shooting, close enough for all but real fine target work, but better scores can be made with a .45 caliber than any other. The .45 New Service at present holds the world's record at 20 yards with a perfect score of 100. Summing up, we can safely arrive at the conclusion that the .45 caliber Colt's cartridge will better and more completely meet the requirements of modern users of the large caliber revolver. Right here, I wish to say something regarding that bogie of the beginner—recoil. The general impression seems to be prevalent in the minds of those who have never fired the .45 revolver, that its recoil and firing is terrific, wrist-spraining and pain-inflicting to the holder. Such, however, is far from being the truthful state of affairs. *The .45 has not a strenuous kick.* It has a certain amount of free recoil, we freely admit, and if too high a grip is taken on the stock, you are apt to get "stung" between the thumb and forefinger a little, but when properly held, the kick will be no more noticed than that of the .38 revolver using the .38 S. & W. special black powder cartridge. The recoil of the .45 is the last thing imaginable to prevent the average shooter from owning one. If you are any at all accustomed to revolver shooting, the .45 New Service will be an agreeable surprise to you when first you shoot it. If you are inclined to be a little skeptical or have very soft hands, there are short and medium range loads for the .45 gun, which will enable you to work up to the full 40-grain charge of the "peacemaker" by degrees.

The next consideration is that of length of barrel. This should be the least puzzling of any to the shooter. Unless you desire the New Service for a pocket gun and there are few better ones as far as effectiveness is concerned, the 7½-inch lengths is unquestionably the correct size to give the best results from the .45 cartridge in range and accuracy. More power and accuracy are developed by the 7½-inch barrel, for it offers the maximum distance between the sights and the largest space for the more complete combustion of the powder charge. True, the 5½-inch barrel was preferred by many of the older day gun fighters and officers of the law, because of its quicker handling properties; but these gentlemen done the bulk of their business shooting at very close ranges and frequently staked their very lives upon the agility of their wrist and trigger finger. Shooting a .45 gun with a very short barrel is rather uncertain work and the recoil is more marked and unpleasant.

For strictly frontier work the single action Army gun in .44 or .45 caliber is undoubtedly the real thing, and if I were going to be engaged upon any work of this character it would certainly be my choice, but, as before mentioned, the ordinary shooter has few chances for mixing in with any of the unadulterated old time conditions which are





SINGLE ACTION ARMY COLT  
"PEACEMAKER"

about as plentiful as wild turkey in these "diggings." The improved New Service Model 1909 will, I think, better please and satisfy the average shooter who desires a weapon for all classes of shooting, target work included. The present New Service revolver is greatly superior to the old model and possesses all the improvements incorporated into the new Army Special, which is about as near perfect an arm as mere man can expect, with the single exception of the new style thumb latch. The cylinder turns to the right, is correctly and rigidly locked, the loose nose firing pin accurately centers the primer, and the positive lock prevents all premature explosions and accidents mostly due to the users' carelessness. The old style latch as present on the New Service is just as accessible and easy to operate as the new flatter, round one, although hardly quite as presentable in appearance. The ejecting rod in the New Service seems hardly long enough to kick the empty shells clear of the gun, especially reloaded ones, which are a trifle enlarged and stick in the chambers. As it is, the ejector only draws the empties out not quite half their length and some force has to be used and the gun tilted muzzle upward to expedite and insure their removal. Even with this trifle defect in its ejecting mechanism, the New Service is far superior in this particular to the old S. A. Army method, and is easier to clean, reload and eject.

Every detail in the construction of the New Service seems to carry out the idea and give the impression of being built for business. It is heavy, substantial and durable in every particular. The full-sized wide grip is better suited to a man with a large hand and gives a firmer hold, and I may be prejudiced, but I believe the New Service .45 will jump less and is easier held during the movement of discharge than the Single Action gun of same caliber and length. The trigger pull of the New Service improved model is not nearly as heavy and odious as some would have you think. Its regulation military pull of four pounds is easily grown accustomed to and with a little practice with the unloaded gun, you will find you can squeeze off the trigger without seriously disturbing your aim. Speaking in a facetious mood we might add that the New Service possesses other advantages than those named herein. That it is better than an Indian club for chest building exercises, that it is very handy for your wife to hang pictures with, although it might assume the proportions of a pile driver when she uses it instead of a rolling pin to meet you on the front step at 4:00 A. M., and that it is handier than alarm clocks

and slippers to dampen the vocal ambitions of "caruso-istic" cats.

One of the most oft-mentioned advantages of the S. A. Army gun is the ease and speed with which it may be cocked and the first shot delivered. To attempt to cock the New Service after the manner employed on this arm, is to make a very clumsy and ineffectual effort, and the unthinking shooter at once condemns it as slow and hard of manipulation.

The proper way to cock the hammer of the New Service quickly, is entirely different from that employed by users of the single action gun, but is fully as effective and nearly as quick, yes fully as speedy in the hands of one of experience. It is very, very simple and easy to perform. The method of procedure is to pull back double action on the trigger smartly, and when the hammer comes in reach of the extended thumb, it is grasped and jerked back to the full cock notch, the trigger being immediately released by the finger. With a little practice the two movements of thumb and finger can be done in a second's time, while the gun is being drawn from the holster and leveled. This trick is easier accomplished with the New Service than with the smaller double action revolvers because of its longer grip and weight and size.

The colt people state that the New Service revolvers are regularly sighted to shoot point blank at from twenty-five to fifty yards, and with my method of sighting and holding, I find my specimen to shoot dead center at some seventy feet.

The .45 Colt cartridge was designed originally for the United States Government for use in the earlier models of the Colt's S. A. Army revolver in the year of 1873. That date was surely a memorable one for it witnessed the introduction of the most popular repeating rifle known to history, the Winchester Model 1873. Thus the two famous frontier cartridges—the .45 Colt and the .44 W. C. F.—were issued simultaneously, and the race for the favor of the plainsman was even, with no handicap to either. Which won out is hard to conjecture, but I believe the most extensive usage was accorded the .44 W. C. F. As a revolver cartridge the .45 Colts is perfectly balanced in its loading of powder and lead. There is a distinct difference in the requirements of the rifle and revolver load. With a revolver stopping power is the first essential and should be ranked above both velocity and trajectory. As a knock down to stay down projectile, the 250 grain lead bullet driven by its charge of 40 grains of black powder is without an equal in its line. The original load, as first introduced, is the .45-38-256 cartridge as now made by the Winchester Repeating Arms Co. There are various loadings of the .45 shell put out by the different cartridge makers, there being to my knowledge four varieties of the black powder type and two of the smokeless. The smokeless loads of one company, while being clean to shoot and having the advantage in accuracy, seldom find favor with those accustomed to the superior power of the 40-grain charge of black powder.



The Winchester Company give the ballistics of their black and smokeless loads as equal in both energy and velocity while the U. M. C. smokeless shell is about on a par with the performance of the cartridge loaded with 28 grains of black. The Dupont Powder Company state that a charge of 5 grains by weight of Bullseye smokeless will equal in every way the full charge of 40 grains of black. Therefore it would seem that the Winchester Company use this amount in their smokeless cartridge. They also recommend a charge of 4 grains by weight of Bullseye as equal to the 28-grain black load which would seem by comparison of the ballistics following, to be the amount used by the U. M. C. in their smokeless loading of the .45 Colt's cartridge. As regards the accuracy of the various loads, authorities differ. The U. M. C. Company recommend their 28-grain black load as the most accurate of any of their loads with the smokeless charge a close second. The DuPont Powder Company do not think the 28-grain black powder load as accurate as the full black or full and reduced Bullseye smokeless loads. The Winchester Company consider their smokeless charge as giving the best results in accuracy with the full black powder loads a close second.



NEW SERVICE .45 CAL. DOUBLE ACTION COLT

Winchester brand, 256 grain bullet, shot from 5½ inch barrel.

Loaded with 28 grains black powder

Muzzle velocity, 770 foot-seconds; muzzle energy, 336.3 foot-pounds; penetration, five ¼-inch boards

Loaded with smokeless powder:

Muzzle velocity, 770 foot-seconds; muzzle energy, 336.3 foot-pounds; penetration, five ¼-inch boards.

Peters' brand—black powder:

Muzzle velocity, 800 foot-seconds; muzzle energy, 340 foot-pounds; penetration, five ¼-inch pine boards.



ARMY SPECIAL .38 CAL.

The ballistics of the different .45 Colt cartridges are as follows:

U. M. C. brand, 250 grain bullet, shot from 7½-inch barrel. Loaded with 40 grains black powder; Muzzle velocity, 922 foot-seconds; muzzle energy, 472 foot-pounds; penetration at 15 feet, eight ¼-inch boards.

Loaded with 35 grains black powder:

Muzzle velocity, 845 foot-seconds; muzzle energy, 396 foot-pounds; penetration at 15 feet, seven ¼-inch boards.

Loaded with 28 grains black powder:

Muzzle velocity, 735 foot-seconds; muzzle energy, 300 foot-pounds; penetration at 15 feet, six ¼-inch boards.

Loaded with smokeless powder:

Muzzle velocity, 776 foot-seconds; muzzle energy, 334 foot-pounds; penetration at 15 feet, six ¼-inch boards.

The superior penetration of the U. M. C. cartridges is due to the hardness of the bullets which in their black powder loads is about equal to the Winchester Smokeless charge. These hard bullets do not spread upon impact but very little, even when shot into oak seasoned wood. For game shooting they are preferable, but for self-defense and protection purposes the Winchester make is better. I have fired the U. M. C. cartridges into oak and obtained a penetration of nearly four inches, which compares favorably with many of our high power rifle cartridges. The bullets were fired end-ways into oak posts and probably gave better results when fired across the grain. For all round shooting, target included, my choice is the Winchester full black and smokeless loads, although I use quite a number of the 40-grain U. M. C. shells.

The .45 cartridge is very easily reloaded, because of its shape and size, giving no trouble with cleaning and resizing. It can be reloaded very cheaply, and for extensive shooting the reloading operation will cut down a great percentage of the cost of ammunition. The 40-grain black powder cartridges can be reloaded at a cost of \$4.53 per 1,000 or 23 cents per box. The 28-grain black load at \$4.05 per 1,000 or 20 cents per box. The cost of the smokeless load is \$5.25 per 1,000, or 26 cents per box, using 5 grains of Bullseye. By box I mean a box of 50. This is a wonderful saving when compared with the cost of regular factory ammunition and a careful shooter with good tools can turn out



just as good work as any factory. Six grains of Bullseye is too heavy a charge for the .45 Colts revolver, and while the revolver might shoot the load successfully it would certainly strain the gun. I once wrecked a cheap Belgium .44-40 revolver by 6 grains of Bullseye behind a 200-grain bullet. My object was to gain increased velocity if possible, and I guess I got it, for gun and bullet went about as fast as anything I ever ran across.

For the smokeless loads using Bullseye powder the bullets should be composed of an alloy of one part tin to fifteen parts of lead. The Ideal Company recommend a charge of 16 grains by weight of DuPont's No. 2, and although this does not give results equal to Bullseye smokeless, it is fairly satisfactory. For this load the bullet should be cast of one part tin to twenty-five of lead. I use the smokeless primer entirely when using the black powder in reloading. The proper size powder grain for the .45 Colts is F.F.F.G., which, because

of its fine grain and quick burning properties is recommended for use in all revolver cartridges. With the quicker smokeless primer I use F.F.G. size because I load other rifle cartridges and want to buy only one size, and find it gives nearly as good results. For lubricant I use pure tallow with a very small percentage of Winchester gun grease, the quantity of the latter varying according to the season of the year.

For reloading the hard alloy bullets with Bulls-eye smokeless, the Ideal Lubricator and sizer is a necessity, for the sizing die in the hand tool No. 4, is not strong enough to size these bullets properly. This tool and the Ideal Powder Measure should be owned by every shooter who does any extensive loading. The measure is necessary to secure the correct charges of smokeless powder and the lubricator saves time, labor and musing. They are a lasting and paying investment.

## THE JEFFREY .600 BORE

By W. A. LINKLETTER

I AM no-ways sure that I shall be allowed "to break into print," and say things about arms and ammunition, seeing that there has been such a vigorous attempt in the last two years to discredit and suppress me, and belittle my achievements with transformed arms and high power loading, with soft-cast bullets. But as this scribbling is intended to shed light, or diffuse knowledge, in regard to the English large game rifle, of .60 caliber, possibly, my contribution will be tolerated. In the February issue of Outer's Book, Mr. R. L. Glasgow, gives us some very nice talk; and mixed with it a reference to the English large game rifle, which he (and they) refers to as a ".600 Cordite Jeffery double ejector rifle." Now, just why the English wish to make use of that superfluous nought at the right hand of the .60, is more than I can tell; and, that it confuses and deceives many people as to just what caliber it is, I have abundant proof,—for several people have written to me, asking what caliber, in the United States language, is such a rifle?

And I hope Mr. Glasgow will pardon me for "kicking a few kinks out of his remarks, about the (so-called) .600 English cordite rifle and its cartridge. I herewith enclose a picture of the cartridge, which has its credentials on it; which, when translated from figures, to language, reads, .60 caliber, 100 grains cordite (smokeless powder), 900 grains bullet. And the rifle weighs fifteen-pounds. All this I am getting direct from the Jeffery's catalogue, as I have it right before me, so I deem there is no chance for me to err in the premises.

I have seen the statement several times within the last year or so, that said rifle cartridges were loaded with a 600 grain bullet. A 600 grain bullet would be too light for a .50 caliber rifle, if loaded in proportion to its bore, as they load their .40 caliber rifles. For their .40 caliber rifles the cartridge is loaded with a 400 grain bullet; so a .50 caliber. if

loaded in proportion to its bore, would have a 625 grain bullet; a .60 caliber, a 900 grain bullet, which is just what they have. For their .45 caliber rifles, the cartridge is loaded with a 480 grain bullet, which lacks, slightly, of being in proportion to their .40 caliber bullet; but their .45 caliber has a more powerful charge of powder (cordite) in proportion to its bore, than the .60 caliber; so the 480 grain bullet for the .45 does reasonably well.

Fifteen pounds is light weight for a .60 caliber rifle with such a cartridge. Their old four-bore rifle weighed twenty-four pounds, and it was light-weight for a four-ounce bullet. A .60 caliber, if loaded in proportion to its bore, as I load my .40 caliber cartridges, should weigh twenty-five pounds. Within the last two or three years a man endeavored



the discharge of both barrels, at once, in a .60 caliber rifle; but it so smashed his shoulder that it made a cripple of him.

Some people endeavor to convince me that the .60 caliber cartridge is unnecessarily powerful; but an elephant, or a rhino, or an African buffalo, needs just such a cartridge; also, a large grizzly bear. I think that 18 pounds would be a much better weight for the rifle; and that would be light in comparison with the twenty-four-pound, four-bore rifle. (The four-bore is shotgun gauge). The four-bore rifle, when loaded in proportion to its bore, was charged with an ounce of black powder, and a 4-ounce bullet, but notwithstanding its twenty-four pounds weight, it administered "a kick" that it wasn't easy to forget.



# ANSWERS TO CORRESPONDENTS

## THE SAUER-MAUSER

EDITOR GUN DEPARTMENT:—I was very much interested in the clear, detailed, description of the Ross rifle by Edward Crossman in the March, April and May Outer's Book. I have never used the bolt action rifle, always having used the lever action. I am open to conviction, however, and enjoy reading articles on the various styles of arms by those who are thoroughly informed on the subject. The article in May Outer's Book by R. L. Glasgow, entitled "What American Gun Manufacturers Omit," is interesting. I think it would be of interest to many of your readers for some authority to give us a detailed description of the Sauer-Mauser bolt action rifle, with illustrations of rifle and the ammunition to be used with it. The trim, neat appearance of the Sauer-Mauser appeals to me more than any other I have yet seen, of the bolt-action type. As Mr. Glasgow seems to be familiar with the above arm, possibly he will consent to describe it in detail, and explain the good and bad points (if any) in the rifle. Most everyone will admit that it is a much neater rifle than the Haenel-Mannlicher, though there may be certain features of the latter arm that are superior. I will be glad to see an article by some writer who knows going into all the details of the above arms, as it is necessary for us to keep posted on the leading arms if we wish to keep up with the procession. Yours truly,

HARRY T. GILLILAND.

[We are pleased to inform our correspondent that we have arranged with some of the very best writers in the country to supply interesting and detail descriptions of the sporting and military arms of all the great gun making nations. It will continue to be our policy to supply our readers with information on every subject pertaining to firearms that promises to be of interest or practical use to gun users.—R. A. K.]

## NEEDLESS RED TAPE

EDITOR GUN DEPARTMENT: I have been trying to get one of the new Springfield rifles for the past six months, but I am discouraged with the requirements, restrictions and red tape which beset the issue of the rifle. It is impossible to organize a club of twenty here, as required by the government. There are several here who want a Springfield, but instead of helping a man along, the rules of the government submerge one's enthusiasm in ice water. The New Springfield rifle and ammunition should be sold to any citizen of the United States who loves the rifle for the sake of marksmanship. When this is done, the United States will truly become a nation of marksmen. Yours,

J. BOTTKOL.

[The editor of the Gun and Ammunition Department sympathizes heartily with you in your endeavor to sever the red tape of official conservatism, and place the national arm in the hands of deserving civilians. There are thousands of young

men throughout the country, who, like yourself, have served several enlistments in the National Guard, and have contributed liberally of their time and money to assist in building up that valuable branch of our nation's defenses, but who, for family or business reasons, have been forced out of the service. A great majority of these young men were enthusiastic riflemen, and took an active part in promoting that most useful and necessary branch of a soldier's education, and would still continue to do so, if it did not involve too great a personal sacrifice. Those of our young men who, through service in the National Guard Civilian Rifle Clubs, or from a natural love of the sport, have become expert riflemen, and are still willing to give others, less skilful, the benefit of their knowledge and experience, should encounter no obstacles in the way of securing arms and ammunition from the national arsenals.

The only reason that has ever been given for the absurd restrictions which govern the issuing of the national arm to civilians, is the fear that they might get into the hands of undesirable citizens. This single reason loses much of its force when we recall that clause in our National Constitution, which says that "The right of the people to keep and bear arms, shall not be infringed." It is a strange logic that will tax a citizen to build arms for his own and the public's defence; expect him to volunteer for military service when the emergency comes, and in the meantime, through doubt of his loyalty, deprive him of an opportunity to familiarize himself with the weapon upon which often his personal, and always his nation's safety, depends. Even monarchies are more liberal than this, and in most of them, the national arm either in military or sporting model, is easily obtainable without narrow and unreasonable conditions, by those who have the price. While I do not advocate promiscuous, free distribution of the national arm, or even the privilege of purchase without reasonable restrictions, I would suggest that the most liberal consideration be shown those who have proven themselves deserving. Citizenship should be made an imperative condition to the civilians privileged to purchase the national arm at the government price. Honorable discharge from any branch of the service of the United States, with the earned title of sharp shooter, distinguished marksman, or expert, should carry with it, a new rifle free, and the right to purchase at cost, service ammunition at any military supply depot. Every commissioned officer of whatever branch of the service, army, navy, or National Guard, should be ex-officio an instructor in marksmanship, and as such should be entitled to all the privileges accorded an honored representative of the government. I hope the day is not far distant when every community whose numbers will warrant the necessary expenditure, will have a fully equipped rifle range, in permanent charge of a trusted representative of the ordnance department, where without irksome military regulations or the destructive confusion due to lack of regulation, the soldier and civilian, the rifle crank and the school boy, may meet and by a free exchange of ideas, be of mutual assistance to each other.



Enforced military service is repugnant to the average American, but patriotism is not lacking, even among our adopted citizens. The love of firearms and the shooting instinct, is latent in every man who has the spirit of a soldier. If we can train our citizens in the use of the rifle, we may avoid the burden of a large standing army, and the menace of an abuse of power which sometimes is the natural accompaniment of an unemployed army. Fortunately for us all, we have the National Rifle Association to look after our interests in the way of legislation, and there is every prospect that in the not distant future, we shall have laws passed that will enable us to purchase the national arm with less delay and vexation.—R. A. K.]

### INVENTED IN DENMARK

EDITOR GUN DEPARTMENT: I have always enjoyed the correspondence department, and have derived much benefit from the very complete answers returned by R. A. K. I have a few questions to ask, which I hope will prove interesting to other sportsmen as well as myself. What country made the Krag-Jorgensen Rifle? From what country did the United States buy the Krag? What foreign country makes the Krag today, and which country makes the best Krag? Are the foreign Krags the same as the United States Krags in regard to material and component parts and caliber; that is, are they bored to .308? Can you give the address of some dealer outside of Bannerman of New York? Does the Ordnance Department make the laws governing the sale of the United States Army rifles? Yours,  
BOLT ACTION.

[The Krag-Jorgensen rifle was invented in Denmark, and since 1888 has been the official military arm of that country. It is also the military arm of Norway. The caliber of the Denmark arm is 8 mm., that of Norway is 6.5 mm. The Krag-Jorgensen was adopted by Norway in 1894, and by the United States in 1892. The United States acquired the right to make the Krag from Denmark. As made by the United States, it differs considerably from the original model, and is a much better proportioned arm, and is more perfect in detail. Turkey adopted the Krag-Jorgensen in 1893, and continued to use it up to 1903, when it was discarded in favor of the Mauser. Denmark and Norway were still using the Krag in 1908. The Krags made by the United States Government were superior to those of any other make. The component parts differ materially from those of the Krags made abroad, and are not interchangeable, although the principle is the same. Congress makes the laws governing the sale of government arms in the United States. The standard United States Krag is not for sale by any one except the United States Government, and then only under certain restrictions imposed by Congress.—R. A. K.]

### A HOLSTER MAKER

EDITOR GUN DEPARTMENT: Can you give me the address of a firm that handles a good line of holsters and belts? I have been trying for some time to get a good belt and holster but have found

nothing to suit me as yet. I would like to get a chamois lined holster, if they make such a thing.  
Yours truly,  
H. E. HANSEN.

[I take great pleasure in recommending you to Mr. F. A. Meanea, Cheyenne, Wyoming. For many years he has been making belts and holsters for the cowboy trade, and enjoys a reputation among them for all kinds of high class work. He will make you a chamois lined holster, stamped or hand carved Mexican pattern, cartridge belts of single or double, with one or two rows of loops, or anything else that you may desire, all hand made, and of the best material and workmanship. He made me a belt and holster fourteen years ago, and they are still in use, soft and pliable as when first received. In ordering, give waist measurement, make and model of gun, length of barrel, and say if it is double or single action, also give caliber.—R. A. K.]

### THE S. & W. SPECIAL

EDITOR GUN DEPARTMENT: Will you kindly state in your next issue, which is the more powerful and has the greatest stopping power, the .32-20 or the .38 S. & W. special cartridge, using the Colt Special New Police revolver. Yours  
BERNARD SMITH.

[The .38 S. & W. Special cartridge, and the .32-20 Winchester, when used in a revolver with standard length of barrel, compare in power as follows: When loaded with black powder, the .38 contains 21½ grains powder, and 158 grains lead. It has a penetration of eight and one-half ¾-inch pine boards. The .32 Winchester contains 20 grains powder, and 115 grains lead, and has a penetration of six and one-half ¾-inch pine boards. Both can be had with black or smokeless loads in full or mid-range loads, and are reloadable. The .38 has the greater stopping power, and a revolver chambered for it will take the .38 S. & W. Special, .38 long Colt, .38 short Colt, .38 Colt Special, and the .38 U. S. Service, also the mid-range loads.—R. A. K.]

### THE MARLIN .25-36

EDITOR GUN DEPARTMENT: Kindly answer the following questions relative to the effectiveness of the .25-36 cartridge used in the Marlin rifle. How many grains of powder and how many grains of lead does it contain? In your opinion, is the powder charge excessive for the weight of the bullet? Will it shoot accurately up to 200 yards? What is its velocity, also trajectory at 200 yards? Is the bullet sufficiently heavy for deer shooting, using the soft point bullet? Respectfully,  
J. DAVIDSON.

[The .25-36 high velocity cartridge as used in the Marlin rifle, is a most accurate and reliable cartridge for the work for which it was designed. The regular load is 19 grains of Du Pont Lightning smokeless powder, and a full or half mantle bullet weighing 117 grains. With this load it has a velocity of 2000 foot seconds, muzzle energy of 1040 foot pounds, and its penetration is 11½ pine



boards  $\frac{1}{8}$  of an inch thick, with the soft point, and 36 with the full mantle bullet. The trajectory, when shooting at 100 yards is 1.62 inches at 25 yards, 1.88 inches at 50 yards and 1.67 inches at 75 yards. When shooting at 200 yards, the trajectory at 50 yards is 3.75 inches, at 100 yards 5.08 inches, and at 150 yards 3.94 inches. The accuracy of this cartridge compares favorably with the best high power military cartridges up to the effective limit of its range. With a Marlin rifle 3-inch groups are possible at 200 yards with the .25-36-117 factory loaded cartridge. The .25-36-117 is a most desirable small game load on account of its speed, accuracy and killing power. It is adapted to all small game from squirrel to deer. The largest buck of the Virginia species that I have ever seen, was killed with a single bullet from a .25-36 cartridge; nevertheless, I would not wish to be understood as saying that the .117 bullet is heavy enough for deer. The cartridge in my estimation ranks first among the small bores for light hunting.—R. A. K.]

### COLT AMMUNITION.

EDITOR GUN DEPARTMENT: Will you please tell me which is the best cartridge to use in the .44 new service Colt double action, 7 $\frac{1}{2}$ -inch barrel, in both the smokeless and black powder? Do you think the .44-40 cartridge is hard on the gun?  
Yours truly, H. E. HANSEN.

[You do not state whether your Colt New Service .44 is chambered for the regular .44-40 Winchester or the .44 Russian. The .44-40 is loaded by the Winchester Company, and carries a 200-grain bullet. These cartridges can be had in either black or smokeless loads, and with 200 or 217-grain bullets. The smokeless loads will give you about 250 foot second greater velocity, and about 300 foot pounds greater energy than the black powder loads.

The .44 Russian has 23 grains black powder, and 246 grains lead. The .44 S. & W. Special has 26 grains powder, and 246 grains lead. They can also be had in the smokeless. There is no material difference in these cartridges as loaded by the different cartridge companies. The .44-40 is the faster cartridge, but the .44 Russian is better to reload. The .44-40 is not more severe on the gun than other cartridges if properly loaded.—R. A. K.]

### THE COLT AUTO

EDITOR GUN DEPARTMENT: Will you please tell me how the Colt automatic pistol .45 caliber compares with such revolvers as the Colt S. A. Army or Bisley model .44-40, or the New Army Special .38 as to accuracy and for general all round use? Does the recoil have a very disturbing effect? I have owned nearly all of the larger Colt and S. & W. models, but my experience with automatics is limited to the Mauser and a foreign made Browning, using Colt .32 automatic cartridges and somewhat similar to the Colt pocket auto in design. I found the Mauser a very clumsy, bad hanging gun, and a poor shooter. I never could understand why such a finely made gun

with such a fine barrel should be so inaccurate. It was thoroughly tested by several good revolver shots, but the results were always the same even with a stock attached. The Browning is a very accurate shooting arm although it shows hard usage. Can you tell me if such an arm is now on the American market? I picked this one up second-hand. The fellow that I got it from said that it had been purchased in Butte, Montana. It is stamped on the frame "Fabrique Nationale Herstal-Liege (Browning's Patent) Brevete S. G. D. G." Yours truly,

A NEW SUBSCRIBER.

[The Colt .45 caliber automatic pistol is the most powerful and speedy pistol of its type made in any country at the present time. There is little if any difference in the accuracy or recoil of the several arms in the calibers named by you. The recoil of the .45 calibers is somewhat in excess of the .44 Russian, or the .44-40 Winchester, and has considerable disturbing effect in the hands of the average man. The New Army Special .38 caliber has less recoil and while perhaps no more accurate, better results are generally obtained by the average marksman than with larger calibers. Referring to the Mauser I do not think they are as well balanced, or as convenient a one hand gun as the Colt or Luger, but excellent results may be gotten from them after one becomes accustomed to shooting them. The same may be said of the imported Belgian made Browning. The latter arm is still being made in several models at Herstal-Liege, Belgium. I do not know just where they can be purchased in America, but think Shoverling, Daly & Gales, No. 302 & 304 Broadway, N. Y., will be able to help you out.—R. A. K.]

### IDEAS FOR THE .22 AUTO

EDITOR GUN DEPARTMENT: My idea of the proposed new .22 auto pistol is as follows: That it be manufactured by either the Savage or Remington people, with a six-inch barrel, blued finish, magazine in butt to use Winchester .22 automatic cartridges, good fine sights, and to cost \$10 or less. It should also have interchangeable barrels and new ones furnished at a reasonable cost, the same as the Savage people furnish extra barrels at a cost of \$2. If such a pistol be made I would get one of the first and I know of at least six other sportsmen who would do the same.

Yours truly, J. S. K.

### TAKES THE .43 EGYPTIAN

EDITOR GUN DEPARTMENT: I recently purchased an army rifle at an auction, and the auctioneer did not know the correct caliber nor is it stamped on the barrel. The name of the rifle seems to be "P. Stevens-Maastricht, 1875," which is stamped on the left hand side of the breech. There are several other marks on the barrel, but none by which to tell the caliber. I have tried .45-70 cartridge and it is too small. The chamber is bored for a bottle nosed shell. The number "154" appears in several places on the barrel and receiver, the rifle being a five shot repeater, loaded



by the clip system, although the clip magazine is not detachable. It is a bolt action. There is a stamp on one side of the stock with "Maas-tricht" engraved upon it. If you can give me any information concerning the caliber I will be very much obliged to you. I have taken and read the Outer's Book for two years, and it is the finest sporting magazine out.

Yours truly,  
ROY A. AUSTIN.

[The military rifle which you have, is of foreign make. It was made at the city of Maastricht, Holland, Europe, about 1875, and takes what is known as the .43 Egyptian cartridge. You can get cartridges from the John Meunier Gun Co., No. 272 West Water Street, Milwaukee, Wis. The cartridge takes the Winchester No. 2½ primer, holds 70 grains black powder and takes a bullet weighing 400 grains, the shell is 1½-inch in length. The rifle if in good order should be a good hard shooter. Do not use any kind of smokeless powder in it.—R. A. K.]

### THE REPEATING SHOTGUN

EDITOR GUN DEPARTMENT: I am a new subscriber to your magazine and like it very much. I think the department on guns and ammunition is especially good. Please express your opinion, in the next issue, on the use of the repeating shotgun. Do you think it should be lawful for these guns to be used for hunting? It seems to me that this is the quickest and surest way to exterminate game, especially small game, such as birds and rabbits, etc. Last fall I went hunting with four men, three of whom used these five-shot automatic guns. It was nothing unusual for the four of them to go out day after day and bring back anywhere from forty to eighty birds every day. One day they killed sixty-nine and another day seventy-one. They are not professional hunters, but hunt simply for the sport and the game. I was told that two of them one day killed ten (10) birds out of one covey on the rice. Now to me this seems very unsportsmanlike. They could not have done much worse had they shot them on the grown. I would like very much to read some expressions of opinions on this subject by some good authorities and would like very much to see some steps taken to put an end to this abominable practice. Very truly yours.

W. P. H.

[The Outer's Book is in full accord with your praiseworthy sentiment for game protection, but the gun editor does not believe that to specify the type of weapon to be used would be the most effective method of preventing the unsportsmanlike methods of killing game. The writer is sufficiently old-fashioned to wish to place the blame for indiscriminate game slaughter on the unscrupulous outlaws, where it properly belongs, and not on the inanimate piece of mechanism which was merely the instrument. A single shot, fired from a 12 gauge repeater or automatic shotgun will not be more destructive in its effect on game than a shot fired from a double or single barreled arm.

It is clear then, that game protection does not depend on the kind of gun used, but on the kind of men who use them. To my mind it would be illogical and unfair to prohibit the use of any type of arm which a sportsman may fancy, providing it is a sportsman's gun, and is handled as such. The limit of the day's bag for one hunter and one gun is some states is 25 birds. Assuming that the law is a just one, what difference would it make whether the game were killed with a single barrel or an automatic? If a hunter violates the law, he and not the gun which he chanced to carry, should be amendable to the law. Suppose a man could kill the day's legal limit of 25 birds in as many minutes with a pump gun; it should require no greater effort to stop shooting then than if it had taken a whole day to get the limit with a single or double barrel. In most states the bag for each kind of game is limited; this is a wise and equitable arrangement, and if the law were properly enforced few other provisions need be made for game protection. It would be manifestly unfair to inventors, manufacturers, their employees, and the thousands of law-abiding gun users, to legislate against any type of arm because a small per cent of those who use firearms are known to be outlaws. We might as well discriminate against a certain hunter because he happened to be an expert shot.

The hunters whom you have mentioned as "killing 40 to 80 birds day after day" were not sportsmen, they were outlaws, and as such would violate any law that might be enacted for the protection of game. They not only broke the laws of the commonwealth, but they disregarded the ethics of true sportsmanship, which is a much greater crime in the eyes of real sportsmen. Under certain circumstances a man might be justified in taking a pot shot at game, but such occasions are so few and remote, that even if indulged in, they would have no effect on game protection. To slaughter game birds in numbers day after day is a different proposition, and the effect of such wanton destruction is soon evident in any locality. The Constitution guarantees American citizens the right to bear arms, but it was never intended that the privilege of owning a gun should carry with it the right to kill game which is the common property of all the people, in a wanton and wasteful manner. The men whom you have mentioned in your letter are outlaws, utterly devoid of principle, and without the instincts of true sportsmen. They should join the meat trust, so that they would have an unlimited field for their peculiar talent. If properly classified, they would be grouped with the ignorant foreigners who with disreputable old Zulu muskets cruelly assassinate our song birds in the public parks. We can have but little genuine game protection until every true sportsman, every gun lover, and every member of a shooting association, is a self-appointed game warden. I am not prepared to say what punishment should be meted out to men who have so little regard for law and the rights of others, but to make the punishment fit the crime, the obloquy of a good still jail sentence, and to be deprived of the privilege of using a gun for hunting purposes, would help some. R. A. K.]



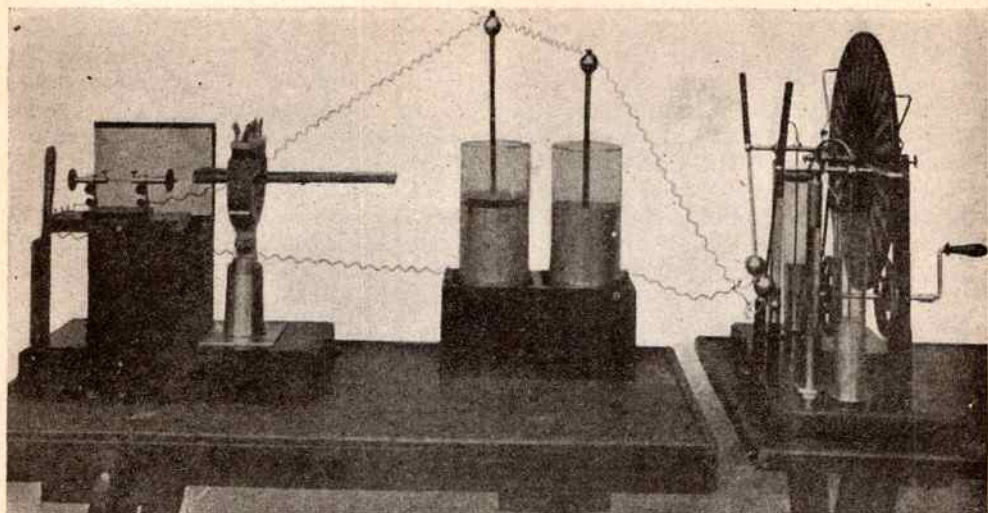
## The Wandering Bull of the Keswick

like *one* over there can you see the *horns*?" I had followed the angle and there was the old familiar "hump" of a moose's withers, from the branches above a brown angle bent down—and how big it looked—and he was a sure enough bull. For just the merest second in the world my eye-lids squinted with that anticipation which only a repetition of "cracks" could gratify, then opened wide, the Winchester came to my shoulder, and I beamed through the aperture of the receiver sight, as the gold bead sought the heart. Then — I pressed. At the first shot the bull moved round to his left, but very slowly. As he wheeled, and ah! but I knew the sign, two soft-nosed from the "33" pierced his heart. These would have amply sufficed and as a matter of fact he did not go twenty feet before there came that echo of "crashing" undergrowth—and 'tis a joyful sound—to be followed a second later by a "thud" full of meaning. But shooting in the greenwoods is uncertain till you see the game go down and during the time he required to cover that twenty feet I kept covering him, and firing. Then came that cheerful "He's down, Doug, shake." The fight was pretty nearly over when we reached him. He swung his head toward the sky, as is their fashion, and I was tempted to take some photographs from in front. Some few years ago, with a rifle on either side, we attempted the same stunt. I only shot just as the wounded bull was about to turn on my companion, and since then I have been less ambitious. This bull was a young one with only a forty-eight-inch spread. He carried the best brow prongs I have yet brought down and to my mind they are preferable to broken points and big pans. As the undergrowth made it impossible to judge the size of the head I

felt well satisfied with the outcome of the hunt. As the photographs show, we dressed him then and there. The next morning we carried him to the head of the camp and packed the meat out on the horse. On our way to the scene of the shooting we passed a place where a big bull had been that very morning. The places where his antlers grazed could not be spanned by any member of our party, which is saying a good deal. That head must have been upwards of 65 inches in width and to my certain knowledge that moose was not shot last year, though Rains afterwards got moose and caribou for his late parties, and also bear. In fact, every man he handled last fall had his shot at game. Early in the season he called out twenty bulls for the first party, that is twenty that they saw, and on one occasion they saw one old "dammer" but the sportsman did not like to risk a shot at four hundred yards. All things considered I would as soon bank on getting a big head in this region as in any other I know. It is certainly not over-hunted and there is an excellent chance for bear and caribou. The latter do not come in till November, but in five days hunting in 1908 two sportsmen whom Rains guided himself, shot two moose, two caribou, and two deer. I remember asking Rains if he thought he could handle two men at once with Mart, of whom I can not speak too highly—to do the cooking, and get them their game late in the season: "Hell!" he said, "we'd fill a freight car up to the roof with game in two weeks' hunting," and I have every reason to believe he is right, though I've heard him say: "Gad, that buzz fly as big as a partridge," but then I saw the buzz fly too.







APPARATUS FOR PHOTOGRAPHING BULLETS IN FLIGHT

## THE FUTURE METHOD OF STUDYING PROJECTILES IN FLIGHT

By PAUL B. JENKINS

WITH ILLUSTRATIONS FROM PHOTOGRAPHS



**I**N a very short time we are going to know all about the actual behavior and phenomena of projectiles in flight — not bullets only, but charges of shot, cannon shells, grape-shot, etc., with every detail of the performance of the piece itself from the instant of firing to the striking of the target, the reloading-process in the case of "automatics," and the like, through all the gamut of either the scientific technicalities involved or the puzzling inviolabilities over which the gun-crank wonders "why in the dickens it did that!" All the mysteries of the rifleman's "unaccountables" to which Professor Mann has given such years of patient investigation, the much discussed "gyroscopic action" of the whirling

projectile, the exact effect of various degrees of choke-boring, the effect of different shapes of bullet-points—all these and the countless other details over which we have all wondered and theorized and argued in days gone by are going to be so perfectly understood that the veriest tyro with his first .22 caliber can understand them!

Ten years ago, over in Germany, a devotee of the shotgun named Albert Preuss, established near the town of Zorndorf a scientific institute for the study of arms and ammunition. The results already attained as the single example reproduced herewith indicates, are as interesting as they are astonishing, for while other forms of the study of the science of ballistics are conducted there, the photographic plates secured by the staff of experts at work are perhaps the most vivid in what they already

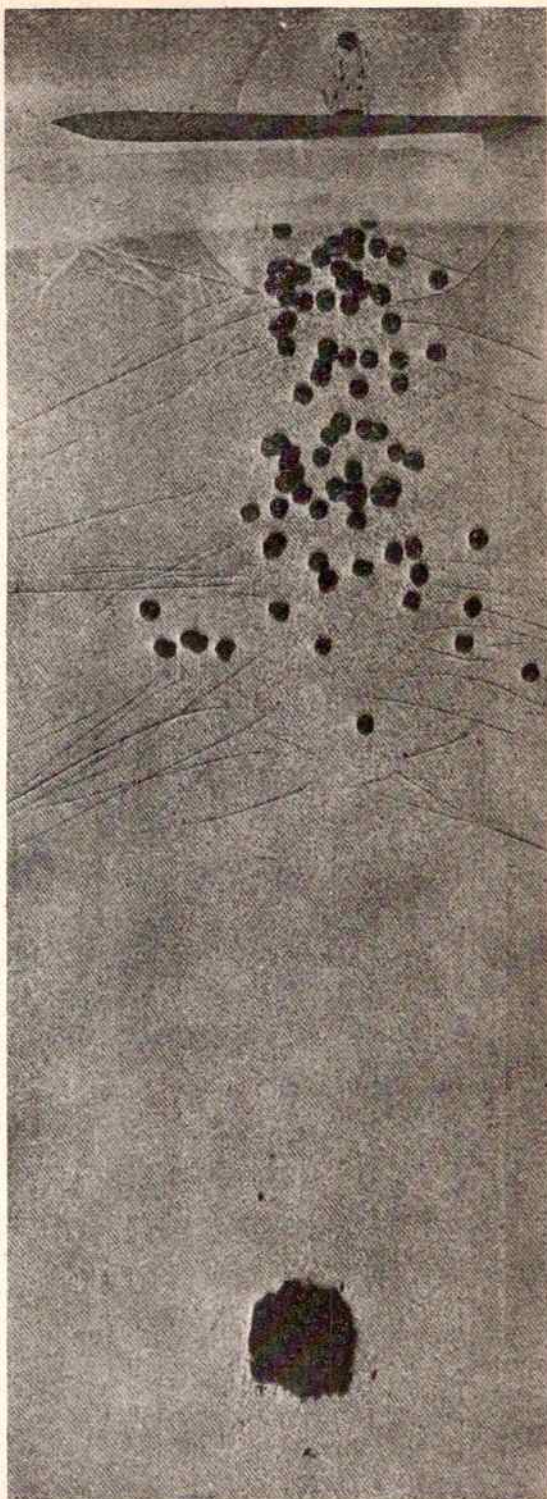


## The Future Method of Studying Projectiles in Flight

tell us. A comment on the photograph shown will perhaps best indicate the nature of the investigations carried on.

The picture is a photograph of a small charge of shot in full flight from left to right. It was taken by the light of an electric spark "fired," so to speak, by the first or leading pellet of the charge as it touched (and passed on through) two thin metal contact-strips at the right of the picture. The brilliant and instantaneous flash of the spark, from heavily-charged Leyden jars, instantly impressed on an exposed photographic plate the picture of every pellet of the charge as they were in the act of passing.

A great many things about the resultant picture are exceedingly interesting. In the first place, it was taken with absolutely no background at all (in a dark and light-tight cellar specially designed for the work), so that what appear on the plate like wrinkles in a white sheet background are actually nothing else than the air-waves produced by the rush of the shot! Thus the eddying air behind the shot, the reverse-wave produced by the recoil of the strips which the pellets are striking, and the front semi-circular wave produced by the leading pellet of the load, are all perfectly visible. Even the tiny fragments of the strips carried away by the first pellet, and the rush of air through the hole with it, are sharply distinct. In turn, behind the flying charge is seen the pursuing wad, and in its vicinity some minute black specks that are nothing else than particles of unburnt powder, for the photograph was taken while the charge was only a few feet—five or six—from the muzzle of the gun, which accounts for the small space as yet occupied by the spreading load, and for the proximity of the wad. (At such a distance the



Shot in flight. At the left is the wad of the cartridge following the charge of shot at reduced speed. One of the shot grains has passed through the target. It can be plainly observed how the air spurts out of the holes made by the shot. What appear to be wrinkles in the paper are air waves, photographed.



velocity of the load would be about 900 feet a second).

Yet it is the instantaneously-caught performance of the pellets of the load that is the most interesting of all. While the bulk of them are, as we would expect, close together, yet both above and below we see flying stragglers of the charge shooting off at angles that indicate to what a distance they would have wandered at, say 40 yards! And, sharply as the exact shape of practically all the pellets were caught, we are amazed to see how many of them are already out of shape, semi-flattened, and even almost cubical—and we instantly realize, if only for the first time, that it is the result of the original gas-pressures in the shell and behind the load at the moment of the explosion. Easy enough to understand, when once they photograph it and show it to us, isn't it? And yet who ever thought of it before? Moreover, a study of the more deformed and flattened pellets show us that it is they that form the stragglers and the wanderers from the direct line adhered to by the rounder and less-deformed pellets—and now we begin to understand how inevitable are those

wide-spreading shots that we have found away off at the sides of any sample "pattern" we have ever made, with even the best of guns. If a single photograph has revelations like this for the shotgun man, what shall we expect from the prolonged conduct of similar experiments with every other imaginable class of projectiles.

They are coming, all right! They have been applying the moving picture method of photography, securing an amazing series of pictures, taken at the rate of 5,000 a second, which show, for instance, the entire action of an automatic pistol from the trigger pull, through the separate operations of the action, the ejected cartridge, and with it the powder gases, the leakage at the breech, the reloading of the next cartridge and, meanwhile, the progress of the fired bullet out the muzzle and on its way! Then they go to the other end of the range—which need be no longer than desired, of course—and show the target, the approach of the bullet, its striking, its passing through if of suitable material, and so on! Something to live for, when they're going to show us pictures like these, isn't there?

## RECOMPENSED

By CLARENCE H. URNER

Some happy spot must hide mid shadows deep  
 In far-off wan-lit dale or Heaven-lit slope.  
 Somewhere in nooks or realms of ample scope,  
 Still firmly held in Dreamland's mystic keep:  
 No will, perchance no power, has Angel Sleep  
 To lift the massive grates which never ope  
 On scenes, surpassing wonted dream or hope,  
 O'er which no wing was e'er allowed to sweep.  
 If not to thee, fair Sleep, belong the will  
 That we should enter Dreamland's inner court,  
 Thou hast the grace and power to calm unrest:  
 Then let that world withhold its secrets still;  
 Be thou to want and sorrow strong support,  
 To minds with care distraught, a royal guest.





A KENTUCKY MOUNTAIN HUNTER'S CABIN



CALIFORNIA HUNTERS AT THE FOOT OF MT. SHASTA



# SELF-LOADING ARMS

## PART I

By L. A. DANSE

*[EDITOR'S NOTE:—This is the first of a long series of articles by Mr. Danse in which he will describe every make of automatic arms and compare the several styles. The magnitude of Mr. Danse's undertaking will be appreciated when it is stated that there have been over 700 patents issued in this and foreign countries. Inasmuch as his articles will deal with about 450 different guns, the series will prove valuable as a work of reference. Possibly some of the earlier articles, of a purely descriptive character, will not appeal strongly to those who are not real gun cranks, but the comparisons, to follow later, will interest every man who uses a hand gun].*



WHEN the writer decided to tackle and "do up" this subject, he thought that it would be easy. The only thing would be to write a few letters and then just sit by, sort out the replays and jot down data from which the article could be easily worked up by anyone. But it has proved otherwise.

The start was made in July of 1909 and there are still several firms to be heard from. As our friend, Mr. Kane, expressed it aptly: "The subtleties of the various languages, the prevailing ignorance of some of the supposedly well-informed, with unwillingness to acknowledge ignorance, and the unfriendly attitude of some foreign makers to the American trade are but a few of the obstacles to be encountered."

It is not the purpose of these papers to go into the history or development of the self-functioned arms, but rather to describe as fully as possible the present, modern products of home and foreign makers. The writer has endeavored to secure data on all the arms now made. If there is any arm, not described herein, he will be glad to hear of it and cover it in later numbers. Advantage has been taken of all channels of information to secure correct reports.

The American arms will be treated first and then the foreign makers arranged alphabetically.

While our home makers have long been known to put out reliable mechanisms, the

writer has been impressed with the superior finish and materials used in the majority of the foreign guns. The design and efficiency of action of the domestic arms being equal or superior, we can still improve along the lines above mentioned.

Another excellent point in the foreigner's favor is the willingness to conform to the individual purchaser's taste and ideas in the make-up of arms. Some of the models like our home makes, are made to a standard from which there is but little deviation. This is notable principally in the pistols and one-hand guns.

The builders of most of the rifles and shotguns will fit their arms to suit all tastes. The actions of different grades of a similar model are alike in design but differ according to the purchaser's desire in finish and sometimes in materials. Details of sights, balance, length of barrels, shape of stock, bore and rifling and other features which come "extra" at comparatively high rates in this country are there treated as expected variations.

It is gratifying to see that our home manufacturers are forging ahead in the matter of different grades of finish and the desire to please the individual taste regarding details.

### THE COLT PISTOLS

These arms are of the recoil operated type; the .45 caliber military, 38 caliber military and .38 caliber pocket models having the barrel locked to the breech during passage of bullet and the .380 and .32 caliber pocket and .25 pocket models being



## Self-Loading Arms

325

247

made with spring locked breech. The magazine is of the single column, detachable type, inserted from below into recess prepared for it in the grip and held in place by a catch. This allows of several fully charged magazines being carried and in-

The frame has, along its upper surface, ways which engage similar ways in bottom of slide, allowing a fore and aft motion of slide on frame. It contains, in the hollow grip, a well for the magazine and a catch to hold magazine in place. Back of the



FIG. 1—.45 CALIBER MILITARY MODEL

Length of barrel, 5 inches; length of pistol over all, 8 inches; weight of pistol, 32½ ounces; capacity of magazine, 7 shells, with one in chamber, 8 shots; weight of bullet, 200 grains; initial velocity, 820 foot seconds; Energy 298 foot pounds; penetration, six ¾-inch pine boards; accuracy at 25 yards, 2.4 inches mean absolute deviation. Type action, recoil operated, with locked breech, outside hammer, side ejection. Type magazine, single column, inserted, detachable box. Sights, front, fixed barley-corn; rear, dovetailed, U-notch. Finish, blued; stocks, checked walnut. Price, \$22.00; price with holster stock (fig. 3), \$30.00.

FIG. 2

serted at will into the pistol as preceding ones are emptied by repeated firing.

In these arms the barrel is fastened to the frame; the slide (which includes the breech block and receiver) recoiling along ways in the frame to function the action. They are

magazine well is the lock, consisting of hammer, sear, safety, main spring and sear and safety spring. On sides of grip are the walnut stock plates. In front of grip is the trigger guard in which is the trigger. The back of trigger is extended in a stirrup shape, around magazine well, behind which is the bar of stirrup which bears on the toe of sear. Above the trigger guard and in front of grip is the seat which contains the retractor spring,

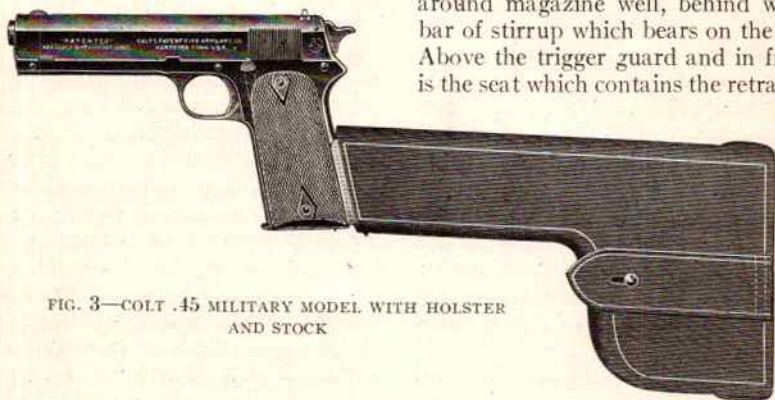


FIG. 3—COLT .45 MILITARY MODEL WITH HOLSTER AND STOCK

semi-automatic, that is the self-functioning feature applies to the loading but not firing, the action requiring a pull of trigger for each shot fired.

### .45 MILITARY MODEL

The pistol may be divided into four principal parts: frame, barrel, slide and magazine.

follower and take-down plug. Across this seat is a fore and aft slot in which sets the slide lock. Across the barrel seat groove in the top of frame are three stop teeth for barrel. In top of frame there are two mortises and pin holes for barrel links, one at front end and one over trigger. On left side of frame at top, by front of magazine well is slide stop. In a seat along top of



frame along left side of magazine well lies the ejector.

The barrel has on its under side two lugs, one at front and one at rear, which are slotted and enclose the upper ends of barrel links. The back of the rear lug is grooved to form a ramp to guide bullets of cartridges into chamber. There are also three stop teeth across under side of barrel. The rear of barrel is notched for nose of extractor. The front has a shoulder which seats in the front of slide when slide is locked to barrel. On top of barrel are three locking lugs which engage corresponding grooves in slide.

The slide is integral with the receiver and breech block. It has in its lower side ways which engage with the ways on top of frame. Across the bottom, near the front end, is the seat for the slide lock which passes through frame and engages the retractor spring follower transmitting its pressure to slide. On top of slide are mounted the sights, the front one riveted and rear one dovetailed. In front end is seat for barrel shoulder. Inside is the barrel seat groove, which has three locking grooves, cut across top, which engage lugs on barrel. In right side near center is port from which are ejected empty shells. To rear of port is seat for extractor. The back of slide is solid and forms the breech block. Through the breech block is a hole for the firing pin which has on its front a spring to hold it away from primer and in its rear upper surface a notch which is engaged by lock pin to hold it in place. In bottom of breech block near rear end is a notch which forms a seat for the action safety piece. Along the left inside of breech block is a slot in which the ejector works. On the outsides of slide (breech block) are cut a series of notches which form a handhold to retract the slide.

The magazine consists of the case, bottom, spring and follower.

The case is of sheet metal, open at top to permit filling and feed of cartridges to barrel and closed at base by bottom piece. In side of case are punched holes through which can be seen the number of cartridges in magazine. Inside the case is the spring and above it the follower. In the back of case is a notch which is engaged by the

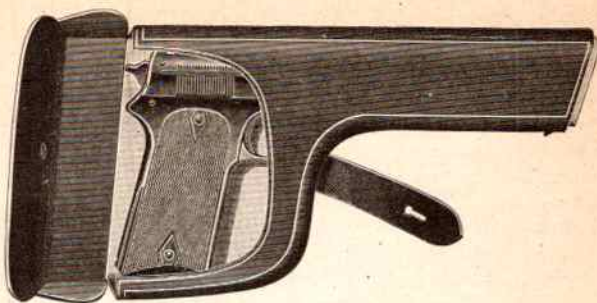


FIG. 3A—COLT .45 MILITARY IN HOLSTER—STOCK

magazine catch when magazine is in place in frame. These parts and their relative positions are shown in figure 4, which is a sectional view of the "works."

The holster stock shown in figure 3 is made of fine black leather over a steel frame. It is lined with buckskin and is hand sewed.

The action of the pistol in firing is as follows: The magazine is filled and inserted in the grip. To load the chamber one full opening and closing movement of the slide is made. If desired, the magazine can be withdrawn and another shell inserted, taking the place of the one loaded into the chamber. Returning the filled magazine to place in the grip makes 8 cartridges in the gun. While the magazine is being filled, the hammer should be lowered to half cock as a safety precaution.

A steady grasp is now taken on the grip, the gun pointed toward the target and the hammer fully cocked. Aim being taken, the trigger is pulled; the bar of the trigger stirrup pressing against the toe of the sear swings it on its pin, withdrawing sear nose from contact with full cock notch of hammer. Owing to pressure of mainspring, the hammer falls, strikes the firing pin which detonates the primer, discharging the cartridge.

The pressure of the powder gases on discharge act to the rear, tending to force the breech block and slide back; however, as the gases also act forward, expelling the bullet and as the bullet has frictional contact with barrel, the rearward pressure is thus balanced by this forward pressure of gases through bullet and forward pressure of retractor spring until the bullet leaves the barrel, allowing the barrel to remain in its forward position locked to the slide and breech block. The instant the bullet leaves



## Self-Loading Arms

the muzzle, the remaining rearward gas pressure and the inertia due to the recoil of the whole pistol overcome the forward pressure of the retractor spring and the barrel slide and breech block start back. The barrel swinging on its links and link pins travels back only a short way, drops down, unlocks itself and three teeth across bottom of barrel engage similar teeth in top of frame stopping further motion rearwards.

The slide, receiver and breech block, freed from the barrel, continue their rearward motion, forcing the hammer back and down

swinging barrel up on its links, to the forward locked position.

The safety piece now rises into its notch in bottom of breech block and as soon as first firing pressure on trigger is released, re-establishes contact between trigger and sear. The arm is now ready for another firing. This sequence of operations continues as fast as trigger is pulled, the magazine spring and follower feeding up the cartridges as the action discharges and ejects the empties. When the last shell of the magazine is fired, the action remains



FIG. 5—.38 MILITARY MODEL 1902

Length of barrel, 6 inches; length of pistol, 9 inches; weight of pistol, 37 ounces. Capacity of magazine, 8 shells; with one in chamber, 9 shots. Weight, bullet, 130 grains. Initial velocity, 1075 foot seconds; energy, 335 foot pounds; penetration, nine 4-inch pine boards. Type action, recoil operated, with locked breech, outside hammer, side ejection. Type magazine, single column, inserted, detachable box. Sights, front, fixed barley-corn; rear, dovetailed, U-notch. Finish, blued; stocks, hard rubber. Price, \$21.00.

to full cock where it is held by re-engagement with sear nose. The first backward movement of breech block depresses the safety piece which in its turn removes the contact of trigger with sear, allowing sear spring to force sear nose into hammer notch.

The extractor hook which is fastened in the right side of breech block, engaging the groove in head of empty shell, draws it from chamber and carries it to the rear until the slide nears its limit of travel when the ejector throws the shell out the port on the right side of receiver. The slide, reaching its rearmost point of travel, passes the face of the breech block behind the head of the uppermost cartridge in the magazine.

The retractor spring now exerts its pressure forward on slide, causing breech block to push the upper cartridge ahead of it, from the magazine into the chamber. The cartridge being seated in the chamber, the pressure of retractor spring carries slide on,

open, the slide being held back by the slide stop which is pressed upwards into engagement with a notch in slide by the magazine follower. To resume firing it is necessary to withdraw the empty magazine and replace it with a full one, when the slide stop is pressed down and the slide goes forward



FIG. 6

inserting a cartridge into chamber and leaving action ready for discharge.

To take the gun down, remove the magazine and shell in chamber, full cock the hammer, press inwards on the take down plug (in front of frame under barrel) until slide lock drops out from the left side. The slide is then drawn back off the frame leaving the barrel exposed for cleaning.



To remove barrel, drive out link pins from frame. This releases barrel and also take down plug, which with the retractor spring and follower may be withdrawn from seat in frame.

To remove lock parts, the stocks are removed when all the lock parts can be withdrawn by taking out their screws and pins.

The assembling is done in reverse order.

except that the stop teeth are left off the bottom of barrel and top of frame.

This pistol is handled in the same manner, it being made in .38 caliber and changed merely in details to suit the smaller cartridges. The action in firing is also similar to the .45.

#### .38 POCKET MODEL 1902

This model uses the same cartridge as the Military Model 1902, and its action and

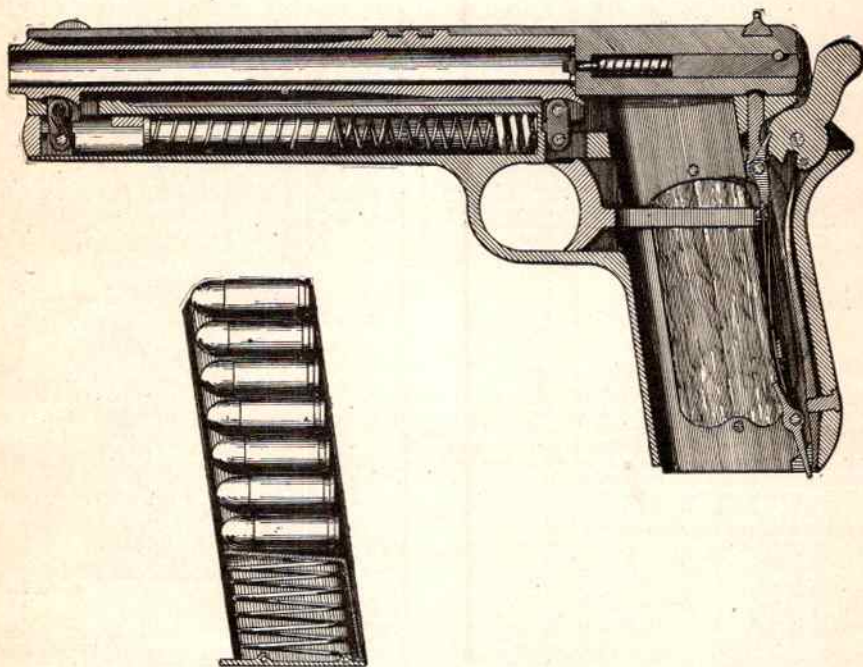


FIG. 8—.38 POCKET MODEL 1902

Length o. barrel,  $4\frac{1}{2}$  inches; length of pistol,  $7\frac{1}{2}$  inches; weight of pistol 32 ounces; capacity of magazine, 7 shells, with one in chamber, 8 shots; weight of bullet, 130 grains. Initial velocity, 1075 foot seconds; energy, 335 foot pounds; penetration, nine  $\frac{1}{4}$ -inch pine boards. Type action, recoil operated

with lock breech, outside hammer, side ejection. Type magazine, single column, inserted detachable, box. Sights, front, fixed barley-corn; rear, dovetailed, U-notch. Finish, blued. Stocks, hard rubber. Price, \$20.00.

When slide, etc., is in place, the slide lock is inserted from the left side.

#### .38 MILITARY MODEL 1902

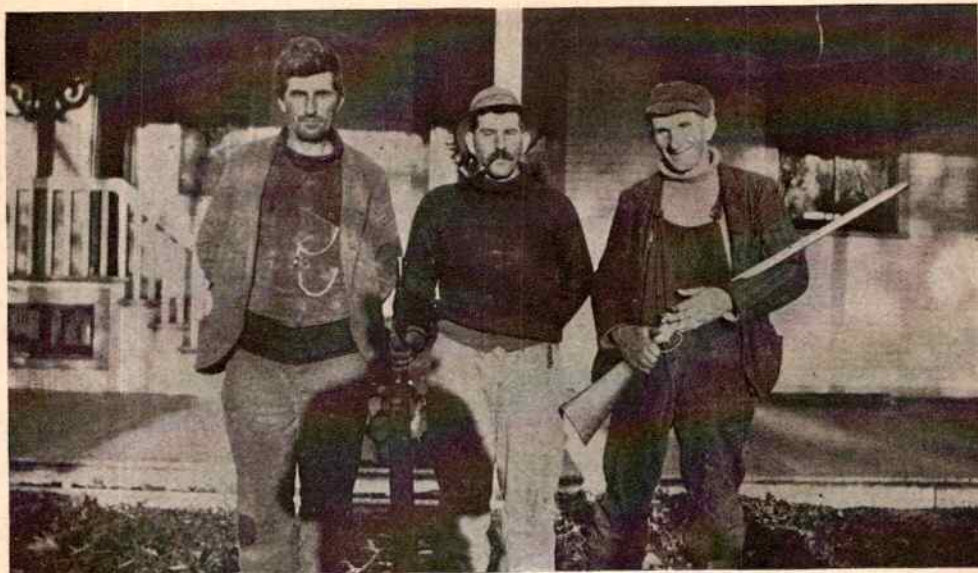
The mechanism of this pistol, as will be seen in figure 7, is identical in design with but smaller than the .45 Military model,

mechanism are the same barring the magazine, which is 7-shot, a shorter barrel, smaller grip and the lack of the slide stop. The description of mechanism and firing of the Military will serve for this pocket model, except that the slide does not remain open after the last shell is used from magazine.

[TO BE CONTINUED]

See page 375





THE THREE CAMERON BROTHERS, THE BEST GUIDES ON THE ST. LAWRENCE

the outer edge, the white under their wings glistening in the rising sun. And when they perhaps finally do swing in to the decoys, the little hammerless does not waver in wandering circles as did that first little gun, but there are two snappy reports from the quick ballistite powder and perhaps two clean kills, or mayhap but one, for the best of us will miss even easy shots occasionally. And so the day passes, with a shot now and then, but always the bright sky overhead and the yellowing rice all round, and we are content to live even though the wait between chances be long. Then, with the evening shadows, comes the streaking flashes upward at the black duck and mallard that, driven out with the dawn of the opening day, have returned with darkness once more, seeking food and rest.

\* \* \* \* \*

And now it is an October day—a typical autumn day of bright sun, westerly wind and crisp air. We are not now on the old Scugog marshes, but located in a grass blind among the many grass-edged channels of a certain widening in the St. Lawrence river. We have a paid guide—a mighty well paid one, by the way,—and we are sitting cosily ensconced in a big leather-covered seat in the stern of a St. Lawrence skiff. It was a cold drive the evening before from the little G. T. R. station down to the river and a still colder row out to the hotel on the

island, and we sit thinking of the roast redhead and apple sauce we had tucked away on our arrival. But now the big rafts away up at the head of the lake are moving and bunches are heading down through the channels — canvasback, redhead, scaup, whistlers and all the late varieties; and they keep on moving all day, and consequently our *kill* grows to near the legal limit. But how vastly different it is now from those past trips to the rice-beds. Now we do only the actual shooting—that only, and even the guide will do it for you if you will allow him his way; all else he does—the rowing, the making of the “blind,” the setting out of the decoys and the picking of them up, as well as gathering your dead duck and bagging them for shipment. We do not need touch a duck all the time we are there. But I fancy all sportsmen who are wildfowl shooters will agree with the writer in saying the work incident to the getting of good bags is more than half the fun. The building of one’s blind or hide, after selecting the most likely location, used to be in itself sport,—while all the other accompanying items, such as attending to the decoys, using the call, gathering the “kills” and tying them together—all these went into one grand ensemble in making up the sweet memories of days afield on the marsh or in the blind with the duck in September or October.



# BIG GAME RIFLES

By CHARLES NEWTON



IN this department, and in the corresponding departments of the different sporting magazines are occasionally found articles upon subjects pertaining to shooting which bear the mark of having been written, not from personal experience but from ideas gained in reading gun catalogues, books, magazine articles by other sportsmen, etc., and we at once set the writers down as "catalogue experts" and give their ideas short shrift accordingly; and this is well, as a general thing.

No one has manifested less patience with the catalogue expert than has the writer, therefore, no doubt, some will be surprised to see him voluntarily enter these ranks. The only circumstances which he can urge in mitigation of the offense are two:—first, that he fully and frankly confesses the sin in the beginning, that no one may be misled thereby, and second, that his position may give him some information which, although second hand, *may* enable him to draw some conclusions of value.

In the trial of a law suit the men chosen as jurymen are always men who have no knowledge of the merits of the suit until the trial begins. The parties then call their witnesses who give their testimony pro and con. The jurymen listen to it all and it is upon their verdict, based solely upon what others have told them, that the judgment is finally rendered, the actual facts established, the rights of the parties adjusted and the money paid.

The writer has never hunted big game, has never, in fact, seen a deer wild in the woods, owing to the obligations imposed by a certain roll top desk, clients who *will* insist upon getting into trouble at inconvenient seasons, ubiquitous terms of court presided over by judges who fail to appreciate the demands of the open season, etc., but he has read a great deal and thought a great

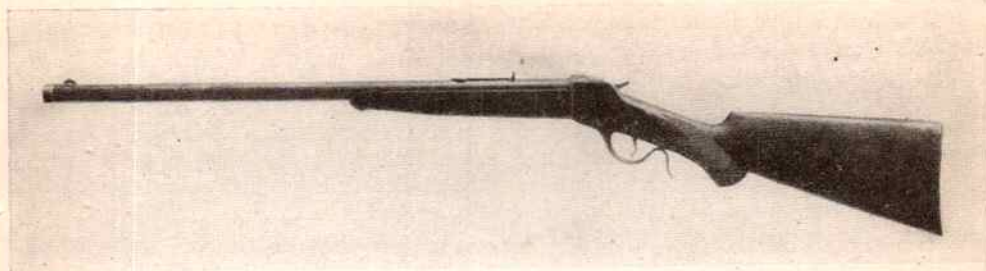
deal more upon the subject, and, like the jurymen above mentioned, has had the benefit of the testimony of most writers of sporting books from Sir Samuel Baker to Theodore Roosevelt, and a host of magazine contributors, incidentally noting the summing up of such writers as "Big Bore Crank" and E. C. Crossman in their great specialty "The Pumpkin vs. the Hat Pin;" therefore, despite the lack of personal experience, he ventures an opinion upon the proper rifles for shooting some species of big game.

Opinions differ very materially regarding the power of rifles suitable for use on big game, and will always differ owing to the different experiences of different sportsmen, these in turn being due to the different placing of the shots, the difference in the vitality of the individual game shot and many other elements entering into the problem. Almost any kind of American game can be killed by almost any kind of American rifle *if the bullet be properly placed* but as we cannot always place it properly we use a bullet having a surplus of power over that absolutely necessary to kill if rightly applied, and the great question is to determine the proper amount of this surplus.

Upon this point the views of the English and American sportsmen have long differed—although they seem to be coming somewhat more closely together since the advent of the high power smokeless rifle—the origin of the difference being in the point of view.

The American sportsman is practically a lineal descendant of the American colonist and backwoodsman. The latter preferred a small bore rifle because it was far more economical of powder and lead, which were expensive and hard to procure, and game was so plenty that he had rather lose a wounded deer occasionally than burn unnecessary powder to throw unnecessary lead. The manufacturers of rifles naturally recognized and catered to this preference, so the American rifle was of small bore and slight power, and a century of progress has not





A BUILT-TO-ORDER .45 SINGLE SHOT WINCHESTER

completely eradicated the ideal first formed through necessity.

The Englishman, on the other hand, if he was a sportsman at all was in comparatively good financial circumstances and the extra expense of large charges of powder and lead cut no figure, and as he usually hunted somewhat dangerous game, he wanted a rifle which, above all things, would stop what it hit and do it quick. Hence he preferred the large bores of great power and his manufacturers built them accordingly. Therefore the ideas and ideals of the two classes differed radically.

At the present time the Englishman is recognizing the advantages of a little less weight of rifle and ammunition even at some sacrifice of power, while the American is coming to see the advantages of a weapon which will kill quickly and surely, even though it be of greater power than grandad's.

Nevertheless we still hear, or see, the remark that it is more sportsmanlike to use a rifle of comparatively small power than one of the rainmakers.

I disagree with this. It will be conceded that if we must kill as noble a specimen of God's creatures as a deer, an elk or a moose, the least expiation we can offer is to kill it as quickly and painlessly as possible; that instant death is better than long suffering from a wound not sufficient to kill at once. It requires less stamina or hardihood to carry a light rifle than a heavy one, less skill to shoot it with the same degree of accuracy and less nerve to stand up against the recoil, therefore I maintain that it is just as sportsmanlike, and a great deal more humane to use a weapon of such power that an animal fairly struck is killed at once than one with which the bullet must be placed in exactly the right spot or the animal is lost to the hunter and left to die a lingering death,

while the sportsman (?) goes off to kill or wound, as the case may be, another animal.

But to return to the question of what is the proper power of rifle. We have seen every rifle from the 25-20 to the .405 enthusiastically recommended as being just the thing for deer and it may be profitable to glance for a moment at what is *expected* of a deer rifle by the *American* sportsman.

As a fair sample of what is considered efficiency in a deer rifle I will refer to Mr. T. S. Van Dyke, one of our greatest authorities on deer shooting, and quote from his work, "The Still Hunter," as follows:—

"To hit a running deer in *any part* of the body at *any* distance is a first class shot.

"To hit at 150 yards anywhere within ten inches of the center of the shoulder of a standing deer or antelope, or strike the body anywhere at 200 yards, is a first class shot. . . .

"A shot anywhere in a circle of six inches around the point of the shoulder will often drop a deer, at once, *but is more likely to let him run from 50 to 200 yards, and sometimes half a mile or more.* Shot above the center of the shoulders, or in the brisket only, a deer may run for miles. Shot anywhere between five inches back of the shoulder and the hams a deer may run all day if kept going. Shot in the haunch, the deer may run all day, depending upon the veins, bones, etc., that are touched by the ball. . . .

"The worst of all shots and the most common one in all shooting at long standing shots and at game running crosswise is what is called the 'paunch shot!' Every shot from the fifth rib to the hip joint—nearly half the body of the animal—may be practically regarded as a 'paunch shot.' A deer or antelope can run for miles when thus shot."



The above is quoted as being a fair sample of American ideas upon the question of what rifle is *sufficiently powerful* for deer. The standard is not high and one can determine, from a comparison of the skill required to make a certain hit and the effect of the hit when made, about what percentage of wounded deer escape to die a lingering death, or give a long stern chase before they are brought to bag.

The foregoing quotation was written before the day of high power smokeless rifles, and the statements made would not be applicable to cartridges of a power varying from the .30-.30 to the .30-.40 and the writer believes, from what he has learned from others, that no rifle of less power than the former should ever be used on game as large as white tailed deer.

The .30-.30 cartridge, U. M. C. loading, has a muzzle energy of approximately 1500 foot pounds and, assuming the above opinion that it is the least powerful cartridge suitable for use on white tailed deer is correct, we will ascertain a suitable cartridge for elk and moose.

Unless the bullet strikes a nerve center such as the brain, spinal cord or heart or disables the animal by breaking bones so as to prevent its running, death, if sudden, must be brought about by the nervous shock, and the extent of the nervous shock necessary to kill is to a great extent proportional to the size of the animal.

A white tailed buck weighing 200 pounds is proportionately about as large a specimen of his kind, as is a bull elk weighing 500 pounds or a moose weighing 900 pounds. Assuming all three animals to have the same degree of vitality, to produce upon the elk the same proportionate effect as produced upon the deer by the .30-.30 cartridge one must use a cartridge having  $2\frac{1}{2}$  times the muzzle energy of the .30-.30 or 3750 foot pounds, and upon the moose, which is  $4\frac{1}{2}$  times as heavy as the deer, one having a muzzle energy of 6750 foot pounds.

Of course if the bullet is planted in a vital spot a .22 short will kill a moose as quickly as it will a deer, but, judging from Mr. Van Dyke's estimate and the reports of returned hunters, they do not all go to the aforesaid vital spot and the proper basis for calculation is upon a shot placed well in the body anywhere from neck to hips. Under these conditions I think it fair

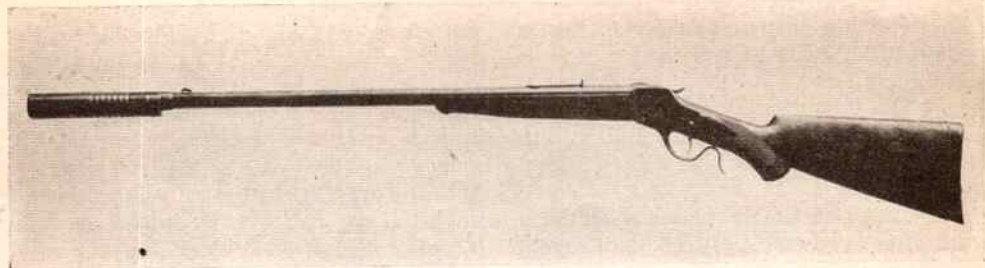
to assume, as above, that the power required to develop sufficient nervous shock to produce a given effect varies about as the size of the animal; this being based, of course, upon the assumption that some form of expanding bullet be used so the energy of the bullet be expended upon the body of the animal struck.

If I am correct in this, we have no cartridge used in American repeating hunting rifles which will produce upon elk, struck anywhere except in one of the nerve centers, a shock proportionate to that of the .30-.30 upon a deer since the most powerful, the .405 Winchester, has but a little over 3200 foot pounds energy; a little less than the proportionate amount for elk and a little less than one-half the amount for moose.

Our English cousins have, in the past, preferred large bore double barreled rifles for game of this class, although they are now beginning to flirt with the repeaters somewhat, and, since no repeater now made carries a cartridge developing over about 4,000 foot pounds energy, the question has arisen, in the writer's mind at least, whether it is not better to have an amply powerful first shot from a single or double barrel than to have a large number of subsequent shots; each of less power, at command.

Some time ago the writer had built a Winchester single shot rifle, .45 caliber, using the .45-70 metal cased and soft point bullets with the .45-125 Winchester express shell, giving a muzzle velocity of 2050 feet per second to the 500 grain bullet and 2250 feet to the 405 grain bullet. The muzzle energy is about 4500 foot pounds, or about the same as the English, .450 cordite rifles. He has never had a chance to try it on big game, but if he ever does make a trip after grizzly bear, elk or moose, unless he changes his mind very much in the meantime, this is the rifle which will go as he understands that this game usually offers a standing shot at first and would prefer the chances of knocking them down to *stay down* at the first shot with this bullet, to the subsequent shots at the running game with a repeater, since in the latter case the difficulty of hitting the bounding elk, moose or bear is aggravated by the comparative inefficiency of the bullet if a hit, except in a nerve center, is scored. And one can reload a Winchester single shot quite rapidly too, if need be.





THE .45 WINCHESTER FITTED WITH A MAXIM SILENCER

The rifle in question weighs but  $9\frac{1}{2}$  pounds with 30-inch barrel, but the cartridges are considerably heavier than those for a repeater, but you do not need so many of them, and if the outfit does weigh a little more than the modern repeaters, one may not have to carry it so many miles, or so many days, or indulge in long chases after wounded game in order to annex that head or rug which may be the object of the chase! since with the less powerful rifles the first game fired at may escape wounded and the hunter must either track it down or look up another.

Napoleon is stated to have once said that in firing on a mob if he used grape shot first he might not need the blank cartridges, so, while with the single shot rifle one does not have a magazine full of cartridges ready for punching holes in the atmosphere, yet, if the first shot kills quick and clean, he does not need the others. If a man cannot hit with the first shot his chance with the others is small, so it would seem to be good policy to make that first shot just as effective as it can be made and depend less upon its successors.

The largest game in this country has been killed with rifles of small power *when the bullet has been properly placed*, and from this fact many seem to think that any rifle which *has killed* such game is big enough for such game, but I contend that what should be used is a rifle powerful enough to kill, quickly and cleanly, *not* when the bullet is properly placed, but *when the bullet is placed where the sportsman of average skill can be reasonably sure of placing it*. If further argument upon this point is needed it is found by referring to ex-president Roosevelt's story of his recent African trip, now running in Scribner's, in which there is scarcely a number but contains descriptions

of shooting antelope, giraffe, etc., with a New Springfield or a .405 Winchester and having to hit them time after time before they would drop, frequently running them down with a horse. It would have been far better, from the standpoint of the game at least, to have given them one bullet from his .450 Holland rifle and ended their suffering at once.

Of course, the delivering against heavy game of shots sufficiently powerful to kill quickly and cleanly at once introduces the question of the comfort of the man behind the gun. Any increase in the energy of the bullets brings a corresponding increase in recoil, and this must be taken up either with increased weight of the rifle or increased blow on the shoulder, and thus the question of practicability of using cartridges of certain power comes in.

However, modern progress has intervened to a certain extent to modify this proposition as the writer learned when he attached a Maxim silencer to the .45 caliber high power rifle above mentioned.

No silencers had, to the best of the writer's knowledge, been built for anything like this power rifle, so the writer procured one adapted to the .45-70 Springfield cartridge and cutting off four inches from the end of the barrel of the rifle, leaving it twenty-six inches long, the silencer was attached and a test showed that as nearly as could be estimated the recoil of the weapon was reduced about fifty per cent., being about equivalent to that of the .35 caliber Winchester model of 1895, and while still a strenuous cartridge—one which can be fired without discomfort.

The writer has used the Maxim silencer for a little over a year, using it on a high power rifle, and in using one adapted to the cartridge with which it is used, found the



sound very much reduced and accuracy not interfered with in the least when it was properly attached, but the reduction of noise he considers to be a matter of small importance. The important feature is the reduction of concussion and recoil and in this regard the silencer is, on heavy rifles, almost invaluable.

A rifle, in order to be practical for large game, must be of comparatively light weight so as to be readily portable and it must not produce such a recoil as to lead to flinching or inaccurate shooting through gun-shyness and the application of the silencer, which, as we understand, was originally intended to merely reduce the sound of the explosion, seems to be very valuable for this purpose also, since the entire rifle above mentioned as now put up weighs but about nine pounds and will deliver 4600 foot pounds muzzle energy without discomfort to the shooter.

Of course, the cartridges used weigh considerably more than those for the smaller calibers, but we think this is more than offset by the reduced number of cartridges needed, as one fair hit is sufficient to do the business and this one cartridge for this rifle weighs considerably less than the magazine full ordinarily fired at large game from the smaller bores, therefore we think pound for pound *sufficient* cartridges for this rifle weigh less than *sufficient* cartridges for a less powerful rifle. It would seem that Mr. Maxim's efforts to do away with the report of the rifle would have as a net result the making practicable of the use of rifles of far greater power and consequently superior killing capabilities than those heretofore in use.

Here's to the rifle which is sufficiently powerful to do its work quickly, cleanly and painlessly.

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## GOING HOME

By MILDRED TRAVERS ANDERSON

The family is going home to-day  
Quite soon we'll all be on our way  
And oh, I hate so much to go  
Because I love the country so.

I hate to leave the bubbling brook,  
The quite shady orchard nook,  
The big rop swing, the bees and things,  
The pigeones with the trailing wings.

The loft, the shady swimming pool,  
The forest paths so dim and cool,  
I hate so much to leave it all—  
Oh dear, why must there be a Fall?

I'll say good-bye right here, dear friends,  
For over there the roadway bends  
And everything is lost to view  
The barns, the gate, the lane and you.

Good-bye dear house, good-bye, good-bye,  
Dear hills, and smiling sky,  
Good bye to all the birds that sing.



# A SAVAGE FACTORY TEST

By PASCAL DE ANGELIS



THE title is accurate. In the vernacular, it was simply fierce. From ten years' experience with self loading pistols, I have acquired a deeply seated distrust to their reliability and therefore I am by no

means a lenient critic of their performance, but I believe in giving everything a square deal, even an automatic pistol, and I said at the time, and I repeat now, that in this test the gun was not given a square deal. Judge for yourself. Last month the .45 caliber Savage pistols that had been issued to troops for field test were returned to the factory to have improved magazines fitted to them. The ears and upper edges of these magazines are so constructed as to present a very much larger portion of the head of the cartridge to the face of the breech-plug in the closing movement, thus guiding the cartridge into the chamber with greater accuracy, and, so far as my observation goes, absolutely preventing the form of jam caused by the loaded cartridge failing to center in the chamber, and wedging between barrel and bolt. This improved magazine necessitated a very slight change in the shape of the extractor.

On the 13th of June, Mr. Adriance, the president of the company, asked me if I could come down to the factory and see one of the pistols shot a thousand rounds for endurance. I went, and if I came to scoff, I certainly remained to pray.

The pistol selected for test was factory number 43, and it showed the results of very hard usage by troops. In fact, it looked as though it had been through several very bloody wars. It was equipped with the new magazines, but the new extractors were not completed at that time, and it had its old extractor, cut to fit. The ammunition was U. M. C. factory loaded, made to meet government specifications, with 230 grain bullet, and giving 800 foot-seconds velocity.

The firing was done by a pistol expert employed in the testing room, Mr. Adriance, Mr. Chadwick and Mr. Wood, and I fired a few magazines full myself. And the way that gun was shot was an outrage! Did they fire deliberately, allowing the arm to cool after each series of fifty rounds? Not much! There was a state league baseball game going on across the street, and they wanted to get over and see the last few innings. Therefore the gun had to hustle. They shot at the rate of two to three shots per second or faster—I held a watch on them part of the time—and just as fast as they could drop an empty magazine out and slip a loaded one in. When the gun got so hot that it was impossible to hold it in the hand, Mr. Adriance cooled it by splashing cold water all over the barrel and bolt, and they went right on as fast as ever. Mr. Adriance shot several magazines full with the gun upside down—he pulled with his little finger, and in order to compress the grip-safety with his thumb got his wrist so near to the course of the recoiling bolt that I was certain it would cut him every shot, though somehow it didn't—just to show me the gun would function perfectly that way. I bear witness—it certainly did.

There was exactly one jam in the thousand rounds. It was said, before commencing the shooting, that it was by no means certain that the strength of the altered extractor was sufficient, and that they expected it to break at the point where it had been weakened by cutting, and sometime during the firing of the eighth hundred, the ejected shells, instead of going up and forward, and landing about twenty-five feet in front of the operator, as they had been doing all along—the gun is said to “throw the empties into the enemy's camp”—began to go straight up in the air. Mr. Chadwick at once said that the extractor had broken, but the firing was continued without any interruption, and three more magazines full were fired before trouble developed. Then a fired



shell jammed with its head against the rear end of the barrel and the lower edge of its mouth against the face of the breech. This jam was instantly corrected by turning the gun upside down and retracting the bolt, when the shell dropped clear, and firing could have been resumed immediately, but it was then determined to put in another extractor, which was done. The chief function of the extractor seems to be to guide the shell accurately against the ejector, so that it will be ejected with the proper degree of force and in the right direction, and the arm seems to operate surprisingly well with-

impressed, not only by the wonderful certain action of the arm, and the great durability and efficiency of the self-loading mechanism, but also by the total lack of enthusiasm over this remarkable performance shown by Mr. Adriance and the others. They were frankly bored and in a hurry to get the thing over with. The expected absolute certainty of action, and the fact that they got it didn't seem to please them much, or surprise them at all. I have great respect for Mr. Adriance. He is emphatically a practical man who believes in a tough gun. No gun is ever petted and



THE SAVAGE AUTOMATIC

out it. The gun worked perfectly for about a hundred rounds more, when one of the points of the grip-safety broke. This grip-safety, of course, is not a necessary part of the arm's mechanism, and the makers justly consider it a handicap to the arm, and an unnecessary complication, but the ordnance office insisted that the pistols be equipped with it. The arm was not disabled in other respects, however, and the insertion of a small fillet permitted the firing of the remaining rounds to be continued without a hitch of any sort.

To appreciate the severity of this test, one should have seen it. I was particularly

coddled and nursed along through any tests of his.

There is, of course, one thing to bear in mind in considering all this. The ammunition was approximately perfect. Whether this gun, or any automatic, could have done as well with inferior ammunition is very improbable, but the Savage is a wonder in handling ammunition with deformed and mutilated bullets. I have fired and seen fired a very large number of cartridges which have been culled out at the factory as defective, in the .32 caliber pistols, and I have yet to see a jam caused by them.



# A SAUER-MAUSER FOR THE MODEL 1906 CARTRIDGE

By R. L. GLASGOW



ANY rifleman will be pleased to learn that a Sauer-Mauser rifle taking the United States Government Model 1906 cartridge has entered the market and can be obtained from the importers in this country. Under date of June 29th, Shoverling, Daly & Gales, of New York, write that they had received a sample of this rifle. No doubt a shipment of them will follow soon, and then every one desiring this rifle may obtain one. It is scarcely necessary that space be taken up here to describe the Sauer-Mauser rifle and the United States Government 1906 cartridge, as most readers of *Outer's Book* are more or less familiar with both, either from having seen or used the rifle as built for the foreign cartridges, and having seen or used the cartridges as made for the New Springfield, or by having read the many articles which have appeared in these columns bearing upon each. Suffice to say, that the rifle is the regulation sporting model 1899 Sauer-Mauser adapted to the 1906 Government cartridge. The rifle may be had in the 20-inch length of barrel, weighing  $6\frac{3}{4}$  pounds, or in the 24-inch length of barrel, weighing  $7\frac{1}{2}$  pounds, approximately. It may also be had with the regular "Quick Demountable" Voigtlaender Telescope Sight, the same as has been furnished on these rifles for the foreign cartridges. The reason for the bringing out of this rifle are so many and so apparent that they scarcely need recounting here either. What man of the National Guard, the National Rifle Association, or affiliated bodies, has not longed for his Springfield in the sporting model? Many of us have gone so far as to have one remodeled (when we have been so fortunate as to have been allowed two) at great expense for sporting purposes. If a really good stock has been made out of a

creditable piece of walnut, either foreign or domestic, and any fair degree of finish has been given the barrel, receiver, and metal parts, all properly browned in the process of remodeling the rough military model to the sporting model, it has cost as much as the new Sauer-Mauser will be sold for in this country. The fact that the New Springfield is not issued to citizens who are not members of a branch of the military or of the National Rifle Association will no longer be cause for regret, as even those who are allowed the New Springfield, and have them, will be better pleased with the highly refined sporting model "Springfield," as the Sauer-Mauser might be termed. As every one knows, the Springfield is a Mauser, modified in some of the very small details—the action and its operation being identical in general. The beauty, symmetry, balance, finish, smoothness of operation and extreme high quality of material used in the barrel, the great precision and care with which the rifling and boring is done by the German manufacturers, and the proverbial disregard of cost in the interest of the production of the finest possible article, which is characteristic of the German manufacturer, will all appeal to the fancier of a fine rifle as embodied in the Sauer-Mauser. The fact that the cartridges (the only expense of rifle shooting that is of real consequence) are those with which the military marksmen are familiar, and more or less well known to every rifleman in the land, whether he has used them or not, and which have demonstrated their superiority in accuracy, range, execution, and all round utility as a sporting and big game cartridge, and last, but not least, are obtainable at home duty-free, is abundant reason for this combination to spring into immediate favor with American sportsmen and big game hunters. To the above may be added the comforting thought that the '06 cartridge is provided with non-



mercuric primers, and loaded with a powder that causes less corrosion than Cordite, or other explosives used by most foreign manufacturers of arm and ammunition, and also the new lubricant for the bullet which insures against early destruction of the barrel for accuracy.

The Outer's Book for August contains a letter from Mr. Crossman in which he challenges my former statement that I am the original champion of the Sauer-Mauser 1906 Government-Cartridge combination, and lays claim to that distinction for himself. He offers as evidence the statement that he forwarded a cartridge-case, some bullets, and a drawing to Sauer & Son something over a year ago, with a request for a rifle for that cartridge. He very modestly yields me the empty honor after making his claim to it and attempting to establishing his prior right. While it was *the rifle* and not any honor that I started out

benefit and edification of American sportsmen, and, I, myself, have not thought it in the least humiliating to declare my identity as a "Crossman convert" as regards the "Bolt vs. Lever Action" controversy. I do not mean by this that I have been convinced of the truth of every statement made by him during the time of this controversy, but that he was right in the main, and that he had brought forth thoughts and facts that had not appeared to the minds of many of our number who accepted our domestic arms as all that was desirable, because we knew of nothing better. I might qualify this a little by saying that I had been curious concerning the arms used by famous hunters in Africa and India—having read much after such men as Selous, Major Powell Cotton, and others. This led me to a sort of self-instruction concerning rifles, and I procured every catalogue of all the English and German and Austrian arms manufac-



THE SAUER-MAUSER, SHOWING WORKING PARTS

after when I entered these columns, I would just say that I really did feel the same satisfaction that any one feels when he thinks he has accomplished something for the good of the fraternity to which he belongs, when it was made known to me that this combination was an accomplished fact and the rifle in the reach of every brother rifle crank in America, and I am just weak enough to acknowledge that satisfaction. Then, I am just contentious enough about the matter, in a very kindly way, to produce the evidence which I have at hand to establish my rather proud claim. However, before entering upon this evidence I wish to say for Mr. Crossman's information, that I am not desirous of robbing him of the many honors which are due him for his really superior knowledge of firearms and ammunition, and for the trenchant manner in which he has brought many things to light for the

turers that I could get a line on. This research led me back across the Atlantic in my correspondence to Quebec, and the Ross rifle, which has recently come in for Mr. Crossman's greatest fund of encomiums and most impressive and expressive qualifying adjectives. But more of that further on.

Now as regards the evidence concerning my claim to being "the original champion of the Sauer-Mauser Model 1906 Cartridge combination;" it was in the Fall of 1908 that I first conceived the idea, and was impressed with the desire for this combination. At Camp Logan (Chicago) where we members of the Illinois State Rifle Association had the privilege of the Government rifle range, and the right to compete for honors and prizes with the military, it was not unusual for many of us to take our Mannlichers, Mausers, Winchesters, Remington Automatics and other sporting rifles to



## A Sauer-Mausser for the Model 1906 Cartridge

the range to try them out. With all the discussion and speculation and tests that are incident to this kind of experience, and comparing of the several different high-power cartridges as to range, accuracy and desirability from every point of view, it was easily determined and agreed upon between practically all of us who thus took part in this kind of thing, that the United States Government 1906 cartridge had all the others beaten by far. However, the rifle that it was made for was a military arm, and could not be obtained in the sporting model. It is true that the Model 1895 Winchester for the .06 cartridge was then on the market, but it did not appeal to those who knew the advantages of the bolt action, gained by experience at the rifle ranges. Truly, there are some who really like it, and seem to derive the same satisfaction from its use as I do from my bolt action rifles. After all, there is much in what strikes the fancy of a person to shape his desires and his actions regarding everything, including rifles. At the same time it was also pretty generally conceded by every one of our party that the Sauer-Mausser rifle had many points over all the other rifles in those things that go to make up the perfect sporting rifle—which points are enumerated to greater length than necessary in another part of this letter. Naturally then, it would occur to some of us to think of a rifle and cartridge combination that would incorporate the best of both, and it occurred to me that it would be the acme of perfection to have a Sauer-Mausser rifle to shoot the 1906 cartridge. Following up that thought with a letter to some friends, I found that almost every one to whom it was mentioned thought it would be a fine combination, and expressed a desire for such a rifle. Among that number to whom I wrote was Dr. Marston, of Minneapolis,—a friend of Mr. Crossman's and mine, and I do not make it as a statement, but it would be easy to suspect that Dr. Marston passed the word along to Mr. Crossman, as I asked him to do, on account of his personal acquaintance with Mr. Crossman, and my knowledge of this fact. It was my object, as I have said, to *get the rifle*, and not to extract any honor from going into print about it. However, I did not see anything in any of the sporting magazines from Mr. Crossman bearing upon the subject, and Dr. Marston did not say anything

to me in any of his letters about his having referred the matter to Mr. Crossman, so the matter dragged along all spring and summer till fall. I then concluded to use my Springfield on my big game hunt to the Clearwater Country of Idaho last fall, which I did—taking with me the first two hundred cartridges that ever came to Chicago of the 1906 Model Government loaded with soft-point bullets, as made by the Union Metallic Cartridge Company. Upon my return after that hunt, in December, 1909, I wrote Schoverling, Daly & Gales, of New York, (the American agents for Sauer & Son) asking them to take the matter up with the manufacturers. They replied that they then had the matter up with Sauer & Sons regarding their making the Mausser for the United States Government Rimless Model 1903—and saying further that they had proceeded in that way because the 1903 was made in the sporting cartridges, whereas the 1906 was purely a military cartridge, and the sharp-pointed bullet was unfit for sporting purposes. I replied to that letter with such arguments as those who are informed, would imagine at once—including the statement that sporting cartridges were now made for the 1906 as well as the 1903, and, the large array of evidence concerning the advantages of the 1906 in accuracy, velocity, range, less liability to cupro nickel fouling, which necessitated its adoption by the Government after discarding the 1903 because of its many faults. Though this date was some time before we began to get reports from Col. Roosevelt as to the effectiveness of the 1906 on big game in Africa, we had already begun to get reports from Captain McNabb and other soldier-hunters who had had occasion to try the Springfield on big game, and had found it a revelation, even with the sharp pointed regulation military bullet. I also used this argument effectively, and further pointed out the fact that hundreds of military riflemen who were using the Springfield would quickly adopt the sporting Sauer-Mausser for sporting purposes if it could be obtained for the 1906 cartridge. In reply to this letter to the importers I received their reply, stating that they had weighed the matter carefully, and had come to the conclusion that my arguments were sound, and that they had that day forwarded Sauer & Son some 1906 cartridges by express,



## The Outer's Book

with their request that they make their experiments with the 1906 cartridge instead of the 1903, as per their former request. From time to time this correspondence has had new life given it by such reports from the users of the 1906 cartridge in the game fields as I could get hold of, including

rifle through some catalogues and data which I sent to Dr. Marston, in much the same manner as he appears to have originally taken hold of the idea of the Sauer-Mausers 1906 cartridge combination, I would not express myself as saying so for a fact. He is entitled to whatever honor attaches



THE SAUER-MAUSER

several references to Colonel Roosevelt's wonderful experiences, and forwarding them to the importers. They very kindly and courteously kept me busy with their part of the business, and as a result, they wrote me on June 29th that Sauer & Son had forwarded them the first one of these rifles, and asked me if I wanted it on my order, which was placed with them last December, saying also, that they had given me the first call on the first one of these rifles because I had been the first to request them to make it. So much for the evidence from my point of view, as to who really is "The Original Champion" of this combination.

It is offered with no diminution of my regard for Mr. Crossman as a writer and authority on firearms, but merely to convince him that, though some of us sometimes get into print concerning things that lay next our hearts as sportsmen and rifle cranks with the idea of creating a sentiment that

to the origin of his discovery without interference from me, or even the advancement of the smallest statement to the contrary of my impressions. However, I remember a reference in one of Dr. Marston's letters to the very matter of which Mr. Crossman calls me to account, that is, that the Ross .280 falls off rapidly at the extreme ranges. I was under the impression that Marston took this cue from Crossman, as Marston, like myself, scarcely ever ventured any remarks concerning ballistics. I will not say, however, that Marston quoted Crossman in this. Let that be as it may, Mr. Crossman seems to have the faculty of "reversing himself" with the readiness and agility that the United States Supreme Court has regarding the income tax, and other minor things like that. I will give him credit with being honest, even in that, for while he maintained less than a year ago that the Bisley matches were lost on one occasion because of our



THE SAUER-MAUSER FITTED WITH A TELESCOPE

will yield the desired result, it does not follow that the object might be to rival him or to detract from his pre-eminence in that sphere. His recent articles regarding the Ross rifle have been very full of interest to me, and while I might feel that he might have gotten his first impressions of this

boys having used rifles bored larger than the bullets, he now discovers that the Ross rifle which has done such wonderful things at this wondrous match-ground is also bored larger than the bullets it uses. Verily men's minds do change. It were better thus though, than to stick to a wrong simply



because it was espoused in the beginning, and held to, despite the truth. A descendant from the proverbially "epic-minded Scotch", I am aware of this tendency, which seems to be characteristic of that race, and to the best of my ability I guard against it. I am of the belief that it takes a better man to acknowledge it when he is found to be in the wrong, than to fight and die for a principle that is wrong, no matter how well grounded it may be in his prejudices and traditions. The more gracefully and frankly and openly and unreservedly the acknowledgment, the greater evidence of the true man. With all of this said, I wish to say further, that if I have made a mistake in any, or all of my statements regarding any or all of the things touched upon in my letters, I only need to have them pointed out to me to acknowledge them like the best man I know how to be. On the other hand,—like the Scotch again,—if I have every reason to believe that I am right, and the other fellow wrong, I am inclined to be a little bull-headed and "know it better than any body else." At any rate, Gentlemen;—we have the rifle, and I am glad.

I note the return of our old friend of the fraternity to print:—W. A. Linkletter. He also wishes to take a few kinks out of my inadvertant remark concerning the Jeffery .600 bore rifle. I am glad he did. But I think he will find that I made no reference to the figures, ".600," as relating to the weight of the bullet. In England, as in this country, the first decimals in the reading of calibers always apply to the caliber, and not to the powder charge or weight of bullet. The unit in both countries being hundredths of an inch, and decimals thereof,—the third figure being, of course, thousandths. I agree with Mr. Linkletter that it might possibly be superfluous to add on the last naught, as confusing to many who read it, but I think it would be much better still if instead of the third naught they would use the decimal expressing the actual bore of the rifle or the diameter of the bullet. For instance, there is quite a difference in the actual diameters of the several .35 calibers as adopted by the various American manufacturers for their rifles, and the use of the third decimal to designate this difference would not be amiss.

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## THE CALL

By PERCY M. CUSHING

Last night he saw the twilight fill the street,  
The lights flare up, the mimic day grow white,  
And heard the pavements ring with countless feet—  
He slept last night.

This morn he woke with throbbing lips and eyes;  
The long streets glared; the sun-baked walls rose gray;  
The heat struck down along smoke stifled skies—  
He dreamed today.

Mutely he took his face between his hands,  
And like some outcast on a foreign isle  
Felt the wild yearning for his native land—  
He tried to smile.

Tomorrow will he wake to the caress  
Of winds that long on beckoning uplands slept,  
And see the dawn break wide and fetterless—?  
Tonight he wept.



# THE SPRINGFIELD'S BARREL

By B. O. L. T.



It is a noteworthy fact, that in the recent construction of our new large ordnance guns, viz.: the "big fellows" on the new battleships North Dakota and Michigan, a decided change has occurred. The old style eight-inch guns, were about six feet in diameter across the breech, and forty-five feet long, whereas, the new guns are about five feet in diameter at the breech, much thinner throughout, sixty feet long, and about three times as effective. This great increase in effectiveness, and decrease in thickness throughout, is, but in very small portion, due to any great improvements in steel, rifling, or projectile, but lies practically wholly in the adoption of a new principle, which our ordnance designers and experts have agreed on, after a most careful consideration, and proven facts.

When a shot was fired from the old style ordnance, with their comparatively short barrels and fairly slow powder, it was followed by an enormous recoil, a breech pressure of over forty thousand pounds per square inch, while the projectile acquired a velocity of about 2000 feet per second. But with the new style ordnance, with their prodigiously long barrels, and very slow powder, the results obtained are somewhat different, viz: great decrease in recoil, great increase in accuracy, power, and range, the projectile acquiring a velocity of 3000 feet per second, with a breech pressure of thirty-eight thousand pounds per square inch.

One can readily see the cause. In the old style ordnance a thick barrel was necessary, on account of the principle involved being incorrect; the powder too quick, thereby causing more of an explosion within the chamber, consequently greater recoil, and on account of the short barrel the projectile could not be made to develop a velocity much over 2000 feet per second, no matter how much powder behind it. So, the principle

on which the new ordnance is constructed, is as follows: The powder, which consists of large, perforated, cylindrical grains (consequently very slow burning), is ignited, and begins to burn very slowly, but soon, generates enough gas to start the projectile easily through the barrel, thereby minimizing all explosions within the chamber, which result in recoil, as the burning is continually going on, the gas pressure behind the projectile is continually increasing, and consequently imparting increased velocity to the projectile, every inch it travels through the long sixty-foot barrel, avoiding undue pressure at any point, but by the time it has reached the muzzle all the powder has been consumed, and with its enormous velocity of 3000 feet per second it leaves the gun. Of course it takes rather less time to accomplish this, than it does to explain it.

"It is only on account of this slow burning powder, that exceedingly thin barrels are made possible, and, while these guns are much more powerful than the old style ordnance, yet, to fire a charge of powder in them, that was used in the old style ordnance, would in all probability, burst the gun."

The principle may, therefore, be briefly summed up in the few words, "long barrels, and very slow powder." This new departure has been adopted by the government at an enormous expense. They have equipped our latest and finest battleships with these guns, and these ships are among the finest, if not already the finest, in the world.

Now surely, the principle involved in a gun shooting a 500-pound projectile, that have proven correct, cannot change in a gun shooting a 150-grain projectile, viz.: the Springfield, with 1906 ammunition, though it doubtless seems our ordnance experts thought it could, when they decided on the short 24-inch barrel for the Springfield. How they could have adopted a short 24-inch barrel for the service rifle, and expect results they sought for, viz.: accuracy, range,



and power, but, which they had proven beyond all doubt, could only be attained in a more perfect manner by the adoption of the principle involving "long barrels, and very slow powder," is something I could never quite understand, and if some kind reader of the Outer's Book will enlighten me, as to why they did, I shall feel obliged to him. The 24-inch barrel may be alright for the United States Cavalry, where a longer barrel would be out of the question, but 'tis passing strange, as far as I can see, that this style of construction should be lacking in the rifles supplied to the infantry, who happen most of the time anyway, to be on "terra firma." It seems to me, that if the government is "trying to kill two birds with one stone," by adopting a rifle that can be used by both cavalry and infantry, they are very apt to miss both birds, first because they must adopt a short barrel for the cavalry, and this style of construction has been proven beyond all doubt inferior to the principle involving a long barrel; second, because we have yet to see the rifle that can be used under a variety of conditions, and serve each equally well. The new service rifle of Canada has a 30½-inch barrel, and they claim many new records with it, while the new service rifle of Germany has a 26-inch barrel.

It is a noteworthy fact that the Ross, which has not only broken nearly all world's records, but has created many new ones, involves this principle, or anyway, is the nearest to it. The barrels of these rifles are from 28 to 30 inches, and sometimes more, while the powder is the slowburning "Neonite." Now, we know the Ross' accuracy is superior to the Springfield's, we know its trajectory is flatter, we know its energy is greater, and Mr. Crossman tells us the recoil is the same, yet, the bullet weighs ten grains more, and the shell contains fifteen more grains of powder than the 1906 ammunition. Further comment, as to the superiority of this principle, which may be briefly summed up: "*long barrels, and very slow powder,*" over any other, is useless and unnecessary. In 1903, when the United States team visited "our brothers across the pond," we all remember the big shoot on July 11th. Our team scored 1570, or fifteen points more than the English team, their nearest competitors, and they sailed home to us with the Palma Trophy. In

this match they used the Krag, 30-inch barrel, cut with Stevens-Pope special smokeless rifling, and Lieut. A. S. Jones, in cabling results, said: "The truth of the matter is, we owe the victory mainly to the barrels and ammunition used," and Lieut. Jones certainly knew what he was talking about. Now I would ask, why was this form of rifling not adopted for the New Springfield, instead of the old Krag rifling? If we would have the best results, we must surely have the best appliances with which to accomplish them. There can be no question as to the superiority of the Stevens-Pope system of rifling over the Krag's or Springfield's; the very fact of our team giving it the preference to all others, with which to compete against the world, (and won), should be recommend enough for anyone because there certainly were men on that team "who know."

In closing, I would state, this was not written because the writer entails any special aversion towards the Springfield, or its barrel, but he has merely tried to point out a fact or two that goes to show that our service rifle is not yet *quite* as perfect as some may suppose it to be, and there is still room for an improvement or two before we can pat ourselves on the back and say, "the best military rifle in the world." It may not be long before we have an automatic action on our service rifle, but whether we do or not, the principle involving "long barrels, and very slow powder" is the correct one, and there is no getting around it if one seeks the best results with high pressure smokeless powder.

It may be well to note, that the .280 Ross barrels are 125 times longer than their bore diameter; our 8-inch guns about ninety times their bore diameter, while the Springfield's barrel is but 80 times its bore diameter. (Not taking into consideration depth of rifling, which is the same in both cases).

Now I should think, if we were to take the Springfield's barrel ninety times its bore diameter, or twenty-eight inches, cut them with Stevens-Pope special smokeless rifling, adopt a little larger cartridge case, and a suitable powder, 3000 feet per second would be well within its limits, and as for accuracy, range and power, it could easily hold its own against anything in the shape of a modern high power military rifle.



# A QUICK-DRAW HOLSTER

By THE GUNNER

WITH ILLUSTRATIONS FROM PHOTOGRAPHS

**T**HIS will not appeal to the general run of revolver or pistol shooters who take their guns out to the club range in a grip with a young machine shop enclosed, but is intended for the man who has use for his gun in emergencies when a shot well and quickly placed avoids an unpleasant argument.



FIG. 1



FIG. 2

There may be a few of the younger—aye, and perhaps older—readers who imagine they have use for such an article—a *la* Alkali Ike. Be that "bad man" disease as it may, any man who can and does shoot a pistol or revolver with speed as well as accuracy could, in event of war, do effective service as a trooper in the cavalry, an artilleryman, signal wig-wagger or several other branches where the revolver is the accepted small arm.

The great majority of our country is now so well covered by sheriffs, police and other officers of the law that a weapon for defense is usually consigned to a pocket, but we have still a few localities where it is more healthy to carry and know how to use a gun than to be unarmed.

Practice with the six-gun is not really enjoyed until the shooter can "cut, draw and deal" fast. It is nice to score along in the bull regularly, but—just try it—when one can hit a target that rolls or flies or jumps, then he can well consider himself accomplished.

Mr. Kane has, more than once, ably pointed out the benefits of speed and judgment of motion of targets. Suppose you were to see a nice fat rabbit hopping along; my, wouldn't he taste fine—bang — bang — jumpin' catfish, why don't the

blamed thing stop — O yes, he'll stop — not. Now, old man, wouldn't that snap-shooting skill come in handy just about when Mr. Rabbit says good-bye?

There are hosts of chances for the nature-lover, fisherman or photographer to exercise his skill when out in the wilds. The writer remembers well how he has returned, unsuccessful, from a poor day's fishing and bagged a quail or two, a nice fat pair of squirrels and more than once a coyote or bob-cat.

But to return to the subject. Often there are those who try the quick draw and shoot game, only to become discouraged at repeated fumbles. Perhaps it is just lack of skill and then again it may be the rig which is used.

The regular line of gun-store holsters is good for one thing—to hold the gun. They do this all right and do it like they were glued on. The writer has examined the products of about twenty



FIG. 3

makers and has found only two or three which suited him. Meanea of Cheyenne, Heiser of Denver, and one concern which has ceased to exist, put out well fitting holsters from which it is easy to draw a gun.

The desiderata in a holster for use are a close shaped fit to the gun, an open and unobstructed position of the grip when in holster and possibility of the finger being placed on the trigger while



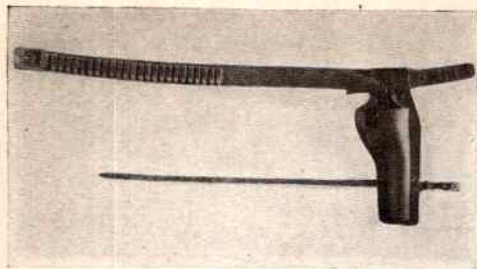


FIG. 4

gripping and drawing. If the holster hugs the gun too tightly it will bind and the gun will raise holster and belt with it when effort is made to draw. This can be partly remedied by tying the holster to the leg, but to properly act, the holster should be loosened. When the holster is small this is a hard task. If it is large enough and holds the gun too tightly, merely through being poorly shaped, it can be remedied by soaking the holster with water and then working it with the fingers, bending it back and forth. The gun is then thoroughly oiled and wrapped from muzzle to grip with a long, narrow strip of rag which is saturated with oil or tallow. When this is done, the gun is placed in the holster and pushed in hard. The whole outfit is laid aside until the holster has dried out, when the gun is removed and cleaned. The holster is next treated to a dose of neatsfoot oil,

to soften it and prevent the absorption of moisture which would rust the gun. Too much care can not be taken to have the gun thoroughly oiled when it is placed in the wet holster to shape it, as if it is not properly protected it will rust during the time the holster is drying.

Another point about oiling a holster. It should have an even application of the neatsfoot oil. The bottom, *i. e.*, the part which touches the clothes—should not be oiled, or the clothes will be painted black by the exudation of oil. Only the part which touches the gun should be oiled.

If the holster is made so the grip of the gun sets above the top of belt and holster, care should be taken to see that the butt of grip sets out from the body when holster and belt are buckled on. If the holster sets so that the grip is twisted in, towards

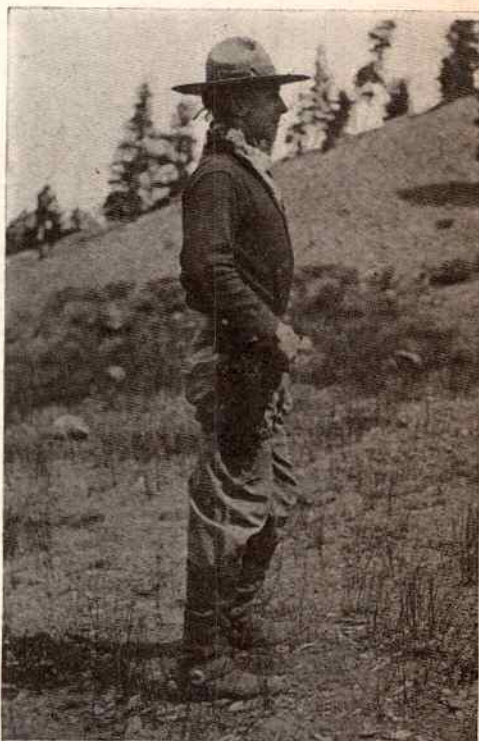


FIG. 6-A

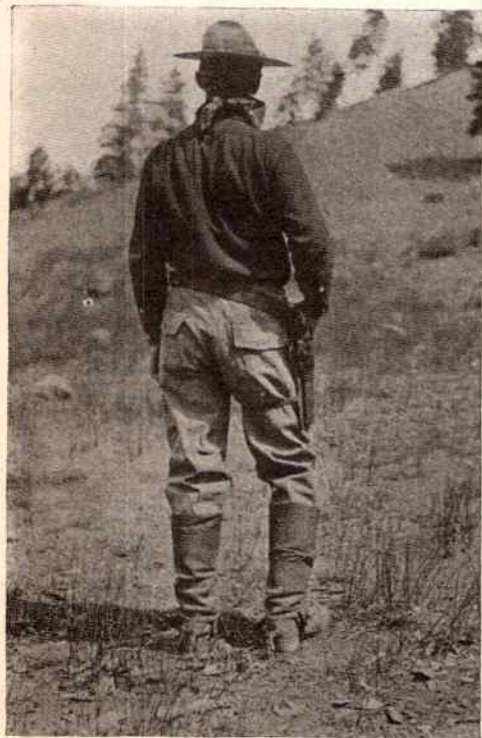


FIG. 5

the body, the fingers can not find and close on the grip properly when drawing hurriedly. With some holsters this can be remedied by taking a sharp knife and cutting away the back part of the belt loop of holster as shown by dotted line in figure 1. This usually allows the holster and gun to assume a better and easier gotten-at position, so that the fingers can grasp the grip of gun with certainty.

If the holster covers up the trigger of the gun, when it is in place, it can be bettered by marking to the proper shape and shaving out with a sharp, narrow-bladed knife. The holster should just cover the trigger guard, but should not obstruct





FIG. 6-B



FIG. 6-C

the trigger. The way to cut this is shown by dotted line in figure 2.

Figure 3 shows a Heiser holster which is cut so as to allow of a good firm grasp of grip and placing of finger on trigger when drawing.

Another noticeable point is that a  $5\frac{1}{2}$ -inch barrel is more easily and quickly drawn than a  $7\frac{1}{2}$ -inch, from a high pattern holster.

For a long barreled gun, it is either necessary to wear the holster low on the hip with a loose belt and tie it down, or use a tight belt and low hung holster. Figure 4 is the writer's outfit for a Colt New Service,  $7\frac{1}{2}$ -inch barrel. This, by the way, is *not* the writer's favorite belt outfit, but is his military target gun. His best outfit is undergoing changes. It consists of a belt similar to that in figure 4; a holster made up the same way but for a  $5\frac{1}{2}$ -inch barrel Colt Single Action Army. This is the best gun now on the market for quick instinctive drawing and shooting. The writer is now at work making his S. A. A. over into a swing-out cylinder, side-ejection gun.

Figure 5 is a back view showing how the gun hangs low and convenient to hand and how the grip sets out so as to be easily caught. Figure 6 is a side view and figure 7 shows how the gun hangs when the wearer is mounted.

This holster fits just snugly enough so that the gun will not jolt out if the wearer's horse frisks him around a bit. It is fitted so that it will not bind to the gun, retarding drawing.

To secure greater steadiness a small strap is fitted to the lower part of the bottom piece, so as

to fasten around the wearer's leg. This is shown in figure 4. The holster is also tied to the belt with a buckskin string, on the inside, to prevent its sliding around.

In order to stiffen the belt where the holster hangs, and prevent the belt from curling, there is an extra strip of leather stitched between the two folds of the belt making it three thicknesses at the end, from an inch beyond the holster, under the holster and to the end of belt. This also prevents the sagging common with the ordinary belt at the buckle. As the buckle is stitched in snugly and the other end of belt is three ply and sticks through a slot in the buckle end right under the tongue, this is a very solid, strong arrangement.

There are twenty-four loops in the belt, in front; with space behind for a number of pockets holding clips of rifle cartridges. The belt is two inches wide, of folded calfskin and is sewed with linen thread.

For the shooter who has the knack of "doing it himself, so he'll know what it is," it may be said that the holster is made in two pieces, one for the bottom and belt loop and the other to hold the gun. The maker can suit himself as to leather used; that in the one\* illustrated is best quality light saddle skirting. For a  $7\frac{1}{2}$ -inch barrel made up like figure 4, it will require a piece 6 inches by 16 inches for the bottom and belt loop and one 10 inches by 12 inches for the body of holster. This can be purchased for from 50 cents to a dollar. The tools needed are a sharp knife, a straight sewing awl, a couple harness needles size 0-4, or



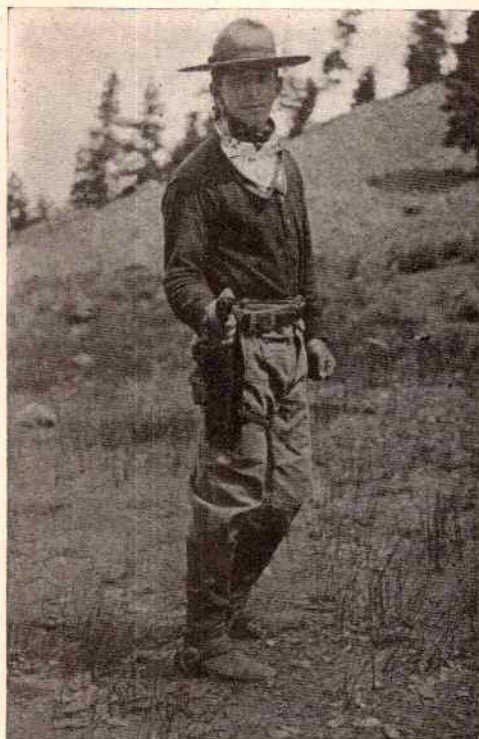


FIG. 6-D



FIG. 7-A



FIG. 8-B



FIG. 8-A



FIG. 10



FIG. 9



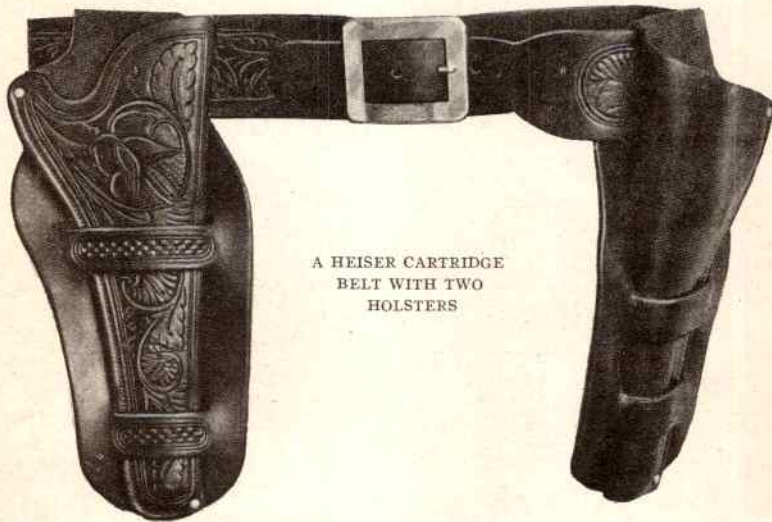
## The Outer's Book

larger, a ruler, tape measure and a channeler (a small tool for cutting a groove near the edge of leather so the stitching sets flush). There will also be needed a piece of shoemaker's wax and four or five yard-long pieces of heavy linen saddler's thread.

If it is desired also to make the belt, there will

buckle tongue, will be needed. This may be a common tube punch of proper size, probably about No. 6. Four or five more yards of thread will be used to stitch up the belt.

To measure up the gun for the holster, take a piece of tough heavy paper, large enough to wrap around the gun, spread it out on the table, lay the



A HEISER CARTRIDGE BELT WITH TWO HOLSTERS

be needed a piece of calfskin 6 inches by 40 inches. This will do for a belt 2 inches wide to buckle from 34 inches to 38 inches waist measure; with 25 loops for .44 or .45 caliber shells. If a wider belt is wanted, or one to buckle up more than 38 inches, these dimensions must be added to. The buckle may be a nickel or brass California belt buckle, size 1½ inch. A punch, to make holes for the

gun on it and, with a pencil, mark an outline of gun on paper, as shown in figure 8. Then fold the paper at A-A, with the pencil marks out, and cut out a pattern with the scissors. Leave ¼ inch to spare all around. When it is cut out, lay it on the table and placing the gun on it, bring the edges together as in figure 9. The edges should now be trimmed off together so as to leave ½ inch for the seam at back. After being sure that the pattern will allow enough to insure a good fit, lay the 10-inch by 12-inch piece of leather on the table *grain side up*, place the paper pattern on it and



MEANEA'S SHOULDER HOLSTER



HEISER'S SHOULDER HOLSTER



A HEISER POCKET HOLSTER



A CARTRIDGE BELT, BY MEANEA



## A Quick-Draw Holster

mark around the pattern with a pencil. Next take the knife and cut out the leather leaving  $\frac{3}{8}$  inch all around to trim to fit. When it is cut out, lay it grain side down on table, lay gun on it and bend it around to place, bringing edges together. As the back seam will be  $\frac{1}{2}$  inch from edge, there should be about  $\frac{1}{4}$  inch or a little more allowance made and the edges trimmed to finished size. The channeler is now taken and run along the edge to prepare for sewing. This is done *only on the outside*.

The maker can follow his own ideas as to shape of bottom piece and belt loop; that shown in figure

the seam channel, care being taken to hold the awl at right angles to the work. The stitches are made two or three at a time so as to keep the edges even and the seam straight.

When the back seam is finished, the gun is placed in holster and pressed down hard. The trigger notch is then marked, the gun taken out and the notch cut. When the cut of top of holster is fitted to the trigger and hammer, the inside edges of the mouth should be beveled slightly to facilitate returning the gun to holster after shooting.

A couple of holes are then punched in the inside of belt loop to tie holster on belt, as shown in



FOR A COLT AUTO

A SUSPENDED PISTOL HOLSTER



TWO OF MEANEA'S SCABBARDS

4 being the best, in the writer's opinion. When this piece is cut out, the loop is turned back and stitched as shown in figure 10.

After the loop is made, the body or gun pocket piece is placed on the bottom piece and stitched fast, as shown in figure 10. When this is done, the edges of the body are brought together for the back seam and a piece of half-inch pine set between the body piece and bottom, to prevent awl marks being made in bottom piece as the body seam is run. When the edges of body piece are even, the awl is taken and two or three holes punched along

figure 10. If a leg strap is wanted, the holes for it are punched as shown in figures 4 and 10.

The holster body is then lightly oiled and worked so the gun fits easily and we have the finished article—and it's a dandy.

The writer does not think it necessary to describe the making of belt, as anyone who has seen a common folded calfskin belt can make his own patterns and cut out, sew and finish his own belt.

There may be those among the shooters who do not like the looks of this outfit, but if they will try it as the writer has, and compare it with all the others they can find, they will say it is the best ever

HEISER'S COMBINATION BELT  
AND HOLSTER



# SHORT BARRELS vs. LONG BARRELS

By CHAS. ASKINS

WITH ILLUSTRATIONS FROM DRAWINGS BY THE AUTHOR

OUR Shooting Editor has given me the task of enlightening a correspondent from Maryland on the subject of long and short shotgun barrels. Above everything I am to attempt an unbiased treatment of the question, otherwise I am under no restrictions. I am free to confess that I had rather maintain a position I have always held as an advocate of barrels of at least medium length. Nevertheless there are two sides and I shall endeavor to state both as impartially as I may.

First, I must digress sufficiently to set our Maryland friend right in the matter of the relation gunbuilders bear to changes in the fashions of shotguns. He evidently concludes that manufacturers, periodically, with malicious intent and shrewd calculation, foster a change in shotgun styles, so that the sportsman will feel under the necessity of buying a new gun or becoming antiquated. I doubt if the factories should be held in the least responsible; they are a conservative lot, disposed to discourage innovations, and well satisfied with present models so long as their machinery is kept moving.

Shotgun fashions do change, however, the same as ladies' hats. The weapon that was thought to be perfect a decade ago is contemptuously thrown aside this year. No blame should attach to our own gunbuilders for this, because we have unknowingly allowed England and the Continent to set the styles for us in shotguns. Fads influence all of us, too, though the more level-headed the sportsman the less radically will he make changes from what experience has taught him is right. Our professional shots we find are the least susceptible to the novelties ordained by fad and fashion. They are under the grim necessity of forever delivering results, and any change liable to reduce scores will receive scant consideration from them.

In regard to England setting our gun fashions, it may be known that the Britons have three styles of shotguns termed, wildfowl, pigeon, and game gun guns. The wildfowl gun is usually a ten bore, weighing in the neighborhood of ten pounds, though it may be a heavy 12 or an eight; the pigeon gun is invariably a 12-gauge of between seven and eight pounds; the game gun is also a 12 of between five and a half and six and three-fourths pounds.

In the beginning the clever little island sent us the wildfowl guns, and we liked them, in fact we swore by our big ten gauges and used them for all purposes, even going across and beating the Britons with them in their pigeon matches. In passing, I should like to say now that no arm has been invented since that is as effective upon wildfowl as were those old tens, though they are very seldom seen in the hands of a sportsman today.

When our professional shots got across to the other side they were laughed at because of the big weapons, and their shooting skill was discounted

also, with the consequence that they came back with the pigeon gun which was thenceforth used in all their matches. Sportsmen followed the black wethers, and thereafter no man would be caught afield with a ten bore.

Manufacturers in America followed this lead (followed, understand,) and with them went the theorists who soon persuaded the people that the 12 was the more effective weapon of the two for all purposes. After we had become fully wedded to our seven to eight-pound pigeon guns as an all-round weapon, our cute *importers* decided that it was time to make another change, and they began advertising the game gun for every purpose, even trap shooting. Many clever amateurs bit at the bait, the cranks went with them, and we heard many stories of how so and so had improved his shooting by changing from a 7½-pound arm to one weighing five and a half. The professional shot, however, whose dinner had to be eaten every day in order to keep him in shooting form, never listened to the call of the featherweights. Neither were our manufacturers ever friendly to this style of weapon. Not so the general run of field shooters; they bought the 26-inch pieces under the fixed belief that they were fully as effective as the larger arms, and in self-defense home builders were forced to meet the demand.

Now the time has come when, having gone to extremes with guns, in some instances weighing under five pounds, with 22-inch barrels, the Britons themselves have begun to tire of the featherweights. Of course in such weapons the charges had to be reduced in proportion to weight of arm, and the domestic, driven game shooter, found himself using charges of 2½ drams and ¼-ounce of shot in a 12 bore. Then the Englishmen pertinently asked, since the charges had been reduced to those of a 20 bore, why not use that gauge itself. This was done and many of the small bore featherweights have found their way over here.

However, the pendulum of gun fashions and fads had begun to swing back. The Englishman has discovered that after all, whatever the gauge, a gun must have length and metal in the barrels if steady work is to be accomplished. All his talk now is of smaller gauges but of good weight and length.

This is in line with what American inclination has been all along, especially the gunbuilders, and now we have the Parker Brothers in a magazine article advocating 20 bores of a weight of not less than seven pounds, with barrels thirty and even thirty-two inches long. It is the writer's opinion that the Parker people are exactly right, and he has held this view for nearly twenty years.

Naturally, the man with the short barreled featherweight of whatever gauge is perturbed, and is seriously asking himself if after all his piece is the proper thing. The example of the trap shooter, the most expert handler of a shotgun in



## Short Barrels vs. Long Barrels

the world, has been against him all the time, and now the weight of the manufacturer's advice has been thrown upon the same side of the scale.

What we can confidently expect in the immediate future is an inclination to use longer barrels, smaller bores, and weights rarely less than six and a half pounds for guns of any gauge. Tendencies and fashions aside, men differ, and the arm that might not be suitable for the average man may be exactly right for some other. My object in this treatise is to make the subject as clear as I know how, in order that every man can have a working theory which may help him to solve the problem of his own individual needs.

The principles involved in the length of barrel are: length of barrels give a longer sighting plane; weight and length make for steadiness and regularity of time; weight and length reduce the recoil which enables the piece to be not only aimed but shot with precision, so far as there is a difference in ballistics, it favors the longer barrel, this being especially true where the charge is heavy; the short barrel is faster, and a short barrel quickens time automatically.

The diagrams enclosed show the benefit of a long sighting plane. For purposes of illustration, extremes of barrel lengths have been taken, the one of 24 inches, the other of 36. The error of sighting is taken at half-inch high at the standing breech, which with the 36-inch barrels leads to the center

on him whatever except to cause him to hold closer with the next shot.

This inability to perceive slight errors in holding is why a trained and accurate shot will not tolerate a gun with a short barrel. Missing does not worry him, but missing the cause of which he cannot analyze is something to be avoided at whatever cost, and hence we find him with a well grounded preference for long barrels, sometimes very long. There is a reason, therefore, for Fred Gilbert using barrels 34 inches long, and except for appearing an odd sheep in the flock he might have them still longer.

It is hard to separate weight and length. Of course on special orders a gunbuilder might make an arm with a short barrel that would yet be heavy, but they dislike to do this for the weapon would be butt heavy and an ill-balanced piece. Hence we can consider that for practical purposes weight of arm and length of barrel go together.

Now in wingshooting an object in motion is struck by missiles from an arm that is also in motion. Success at the game requires that the target shot at should have an even and regular flight, otherwise it would be impossible to hit it with any certainty. Fortunately nearly all game birds, live pigeons, and the artificial targets that take their place have this requisite evenness of flight, which is a lucky thing for our shooting conceit. However, given a target with the desired uniformity

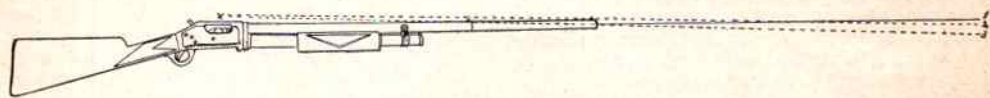


Diagram 1.—Barrel, 36 inches the full length, 24 inches for the short length. Aim taken from cross—error  $\frac{1}{2}$ -inch high. 1—Line of sight. 2—Line of aim, long barrel. 3—Line of aim, short barrel.

of charge being thrown twenty inches high at forty yards. This with a modified choke, or forty-inch pattern for the distance will still catch the bird. But if the barrel were only 24 inches long a similar error at the breech would place the charge 30 inches above the point of aim and so miss the target entirely. The drawings themselves are not especially accurate, because to have made them so would have necessitated finer drawing tools than the writer happened to have, but the theory is true and the figures absolutely correct. The drawing is greatly reduced, and for obvious reasons the entire length is not shown since this would have necessitated a printing page of above seventeen feet. Therefore only the beginning of the sighting lines is shown in diagram 1, and the end in diagram 2.

While the effect of a certain amount of error is absolutely shown in these drawings, yet this error is not the worst thing that we have to contend with in the use of a short barrel. What handicaps the marksman more than anything else when shooting with a short barrel is that *small errors in holding are never detected at all*. Any experienced gunner will tell you that what puts him most at sea, what positively rattles him in his work, is to have apparently held right and yet scored a miss. When this happens a few times, when he absolutely cannot account for his misses, he rapidly loses confidence both in himself and his gun. Now give him a longer barrel, whereupon he at once detects that he was a trifle off in his aim, and a miss has no effect

of motion, and we still have to contend with that moving arm. It is just as imperative that the gun should have a steady movement as it is that the target have a regular flight. The time that elapses from the first movement of the shooter's gun to cover the flying target until the gun is discharged is called the marksman's "time." Time may be fast or it may be slow but if high scores are to be made it must be as regular as the ticking of a watch. There is no other feature of the work of the best wingshot that ever lived which exercised him so much as maintaining regular time. The state of his health, the condition of his nerves, the financial considerations at stake all influence him, and show in the resulting scores.

It is an old story that a man may shoot well in practice only to fail in his important matches; usually the excitement quickens the time too much but it may have the opposite effect and render a contestant over-cautious and slow. Match shooting has a contrary effect on some men. I knew an excellent amateur pigeon shot that never could shoot in his best form unless he made some kind of a bet on the result. Whatever the psychological reason for this I am not prepared to argue, but if it was important that he make good scores he had to wager something, and the more money that went up the better he shot.

It is difficult to so analyze the factors of time as to make the subject perfectly clear in its application to long and short barrels. It has been esti-



mated that from 1-100 to 6-100 of a second is required for a man to pull the trigger after his brain has made its estimates and given orders; it takes 1-100 of a second for the shot to reach the muzzle after the hammer falls. We will take the shortest estimate for the trigger pull which will give us one fiftieth of a second from the time the brain completes its work until the shot reach the muzzle. During this fiftieth of a second a rapid flying bird will move a foot and a half, enough to take him clean out of the pattern. Hence we see not only the necessity of knowing exactly where the gun is sighted when the trigger is pressed, this depending on sighting and sighting plane, but we must know where it will be directed when the shot leave the muzzle and this is strictly dependent upon regularity of time. Weight in shotgun barrels would further regularity simply from inertia if for no other reason; weight in the arm is like the fly wheel of an engine, when you get it started it refuses to stop even should the power be turned off but moves on at a uniform rate.

In first rate wingshooting it is imperative that there should be perfect unity between the work of the brain and the action of nerves and muscles. When the brain says time to pull the finger must not only respond but do so neither too early nor too late.

Fast time is desirable in shotgun shooting, but it must be *controlled* time. There is no surer way of missing than to accelerate the movement of the gun muzzle without at the same time quickening the action of brain and nerves. There is no difficulty in moving the muzzle of a gun faster than a bird flies, but the most rapid controlled movement is only about ten feet a second. Should the muzzle be swinging faster than this no man can tell where his shot charge will strike. This explains a difficulty we have all experienced in killing a fast flying bird that passes closer than thirty feet.

The problem can be worked out in this way. At thirty feet distant the target is moving sixty feet a second; in order to keep pace with the target the muzzle of a gun four feet long would have to swing eight feet a second, or to catch and pass the bird about ten feet a second. If the bird were moving ninety feet a second or if he came in much closer than thirty feet striking him would be absolute guess work. Indeed I have noticed that most men cannot strike a wild duck with any certainty should he whip by closer than forty-five or fifty feet, thus showing that the action of their brain and nerves was too slow for this ten-foot motion of the gun muzzle. Of course in practical shooting the bird would be allowed to pass and would be caught at some angle other than a right angle when the gun would move slower.

The meat of all this is that a man doesn't need a light, short gun in order to quicken his time, for quickness of time depends upon nature and the training of mind and nerves. What the man needs to do is to study himself and to obtain a gun that will *balance* him, moving no faster and no slower than his nerves respond to the estimates of his brain. The majority of sportsmen will find that the correct weight to balance them will lie between seven and eight pounds. Should the gunner be accustomed to a heavy arm and then select a light one, it will betray him in this way. You

have all seen an automobile pulling through a stretch of sand which ends suddenly whereupon the machine fairly bounds forward. Something like this happens when you put a light, short gun into the hands that have been accustomed to a heavier piece. From habit the muscles put a certain amount of force into their work, and the target is covered so rapidly that the brain is distanced and the finger receives only a belated warning. Of course, the opposite of this might be true and a change from a light to a heavy arm would be undesirable.

The effect of recoil upon the accurate delivery of a charge of shot is something that should be considered when treating barrel lengths. Many people still cling to the old belief that a charge of shot is so lightning like that there is no such thing as recoil taking place before the charge is out of the muzzle.

There is a good deal of difference, however, in the speed of a shot charge and lightning. Here we have the one hundredth of a second that is required from the time the hammer fall until the shot reach the muzzle. During that period a fast flying duck like a canvasback can move fourteen inches. It is said that a man can swing a golf stick at the rate of three hundred feet a second, which would mean three feet while the charge was being ignited and traversing the barrel. A sprinter can run three inches before the shot can clear the muzzle. Should you take the gun by the grip and swing it around your head as fast as you could, the muzzle might move at the rate of two hundred feet a second, and if you pulled the trigger when the barrel was pointed east the shot would go northeast, should you swing in that direction. Isn't it conceivable, therefore, that the muzzle of a gun can move a bit under the influence of recoil while the shot are traveling up the tube. Remember, that in case of a 24-inch barrel it would have to jump out half an inch, less than one-sixth of the rate of a man running, to put you clean off the target.

As a matter of fact the gun does jump, and the jump does affect the direction of the shot charge. Moreover, the shorter and lighter the barrel the greater the jump. Very short barrels, like those of pistols and carbines, jump; long and slim barrels are said to flip as well as jump. Flip means that the barrels actually bend while the charge is passing out and this would naturally be in the opposite direction from the jump. Doubtless a barrel could be so scientifically constructed that flip and jump would be equal with certain charges, and the shot would be delivered to the exact center of the aim.

The best we can do, practically, is to have a sufficient weight and length of barrel as to insure a minimum of muzzle movement under recoil. I doubt if there is any such thing as absolutely preventing all muzzle motion under pressure of recoil, however heavy the arm and light its charge. Government experiments with the old Springfield .45 demonstrated that accuracy could be greatly improved with a barrel five feet long, weighing 30 pounds. Even a 10-pound 22 short will have a slight jump sufficient to be detected.

The jump of a shotgun is not so important to the gunner as that of a rifle, for the reason that he



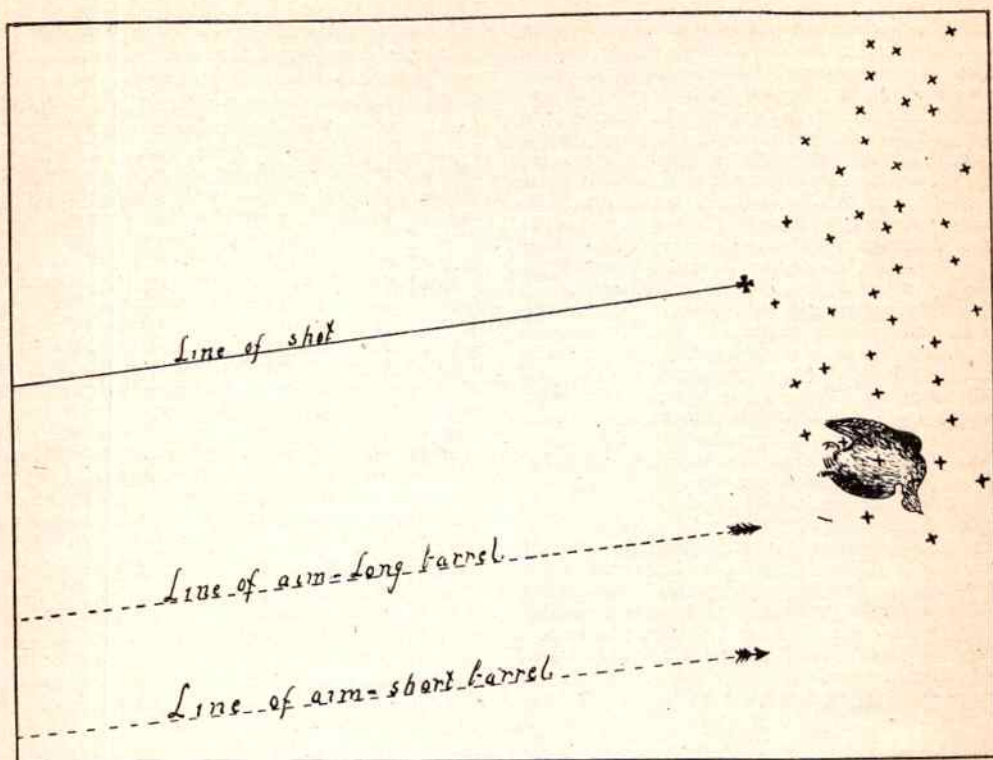


Diagram 2—Conclusion of the lines of aim and shot, 40 yards. Divergence of line of aim, long barrel, 20 inches, short barrel, 30 inches, from line of shot. Width of pattern, 40 inches. Bird would be killed with long barrel, but missed ten inches with short barrel.

has a spread of pattern to make amends. Besides the regular way in which he holds his piece furthers uniformity of jump which can then be allowed for and so become a negligible quality. Nevertheless, in field shooting, shots may be delivered from various positions in some of which the shoulder will not properly back up the gun and then in case of a short, light barrel the recoil may throw the entire pattern off the point of aim. I am therefore disposed to believe that with a short, light barreled arm, no full choke patterns should ever be used, but the gunner should be content with a wide spread of shot in order that the width of pattern shall insure some of it being placed upon the target despite the divergence owing to the jump of the gun.

A hard and fast rule might be made that short and light guns, shooting stiff charges, should invariably be open bored. This rule is rendered imperative both because of the effect of the jump of the piece on the direction of the charge, but for the further reason that short barrels cannot be aligned with accuracy as already noted. Either consideration would require an open barrel and the two combined call for cylinder tubes on a 12-gauge of under 6½ pounds. No man can perform creditably with a 6½ pound 12 with 26-inch barrels, full choke, charged with standard trap loads—no matter the man if he is the greatest expert on earth.

One thing theorists, who advocate short barrels, forever dwell upon is that they are practically as

good, ballistically, as those with longer tubes. There is a good deal of truth in this, of course, yet it should be remembered that whatever the difference it favors the longer barrels. I should conclude that with trap loads there is a difference in muzzle velocity of fifty feet between a 26-inch and a 34-inch barrel. Calculations have been made that with number 8 shot a velocity of 700 feet is required to kill a quail. Whenever the velocity of the shot falls below the required 700 feet results are accidental and uncertain. No. 8 shot, given a standard muzzle velocity of one thousand feet, will have a remaining velocity of 700 feet at forty yards and will kill at that distance, but if the muzzle velocity were but nine hundred and fifty feet, the maximum killing range would fall some distance under the forty yards. Any experienced gunner can recall how he has time and again longed for just a few more yards of killing range; how his bag depended upon getting just a few yards closer to the game, especially when shooting wildfowl. Perhaps the short-barreled man is beginning to wonder by this time when his inning is to come. Practically barrel lengths and weights must always be limited; theoretically the short barrels are inferior, but in actual use many will secure better results from weapons of moderate length and weight.

In upland shooting very few men care to burden themselves with arms above seven and a half pounds, and if this limits the barrel lengths they



prefer to make some sacrifice of sighting plane, etc., in order that the arm shall not be burdensome. Then, too, the natural inclination of a man as he grows older is to lighten his upland gun and probably to shorten it. In doing this he gains in comfort and the speedy use of the arm more than he loses in accuracy or ballistics. Should a man get out of condition and his muscles become flabby he may discover that he has lost correct time. His brain perhaps is working just as fast as it ever did, but his muscles fail to respond with accustomed snap, are unable to place the pointing end of the weapon where it should be when orders come to let go. The gunner is said to be off in his shooting, pulling too quick or pulling too late. In this state of things I have frequently noticed that lightening the gun affords a prompt remedy.

In my own work I have observed that after several weeks of steady shooting, when I should have been at my best, I became stale and began to fall off in effectiveness. It seemed I could no longer get up enough steam pressure, the gun was too steady and moved too slow with a lot of the shots falling behind. I found several remedies for this. One was to walk as fast as I could, warming up like an old horse before his heats. Another was to quit shooting entirely for a week; and the third was to change the arm for a considerably lighter piece. I found the last scheme very effective, and invariably regained form at once. Doubtless in some cases of this kind a permanent change to a lighter arm would prove advantageous.

I can only advise that whenever you find yourself in danger of growing into a poky, deliberate shot, never mind the example of others who may not be in the same condition, but change to a lighter and possibly shorter gun and have it opener bored. Naturally the thing will grow upon you and you will by and by be disposed to prefer an arm still lighter. Should the changes be really necessary, and not provoked by mere laziness, you will discover that you have regained your old speed of delivery and much of its effectiveness. If I knew a young man of twenty who preferred a six-pound gun, I should conclude that making a first rate shot of him was a hopeless task, but the old sportsman of sixty might find such a weapon the very thing to bring back much of his lost form. It is all a matter of wisely knowing what you most require and getting it. You can never increase your speed or quicken time by increasing the weight of your gun; neither can you acquire greater steadiness and accuracy by lightening it. Analyze yourself and your shooting, more men shoot too quick than too slow, but you may not be one of the majority.

The point to be settled is this: If you are ambitious to improve your shooting, to develop expert form, then stick to length and weight of barrels; should you merely desire to maintain a skill long since acquired, the purpose can be frequently accomplished by reducing the weight of your gun.

## A CARTRIDGE MYSTERY

THE following letter from Dr. Edward H. Abbott, of Elgin Illinois, relating in a most interesting manner a very peculiar accident, furnishes the details of a cartridge mystery that is not easily explained. Dr. Abbott says:—

"I am sending you herewith an exploded blank cartridge such as is used in the Springfield military rifle, thinking that it might be of interest to your readers as an example of what high power powder will do. This cartridge with several others was picked up by some visitors at the militia encampment here last year after a sham-battle. One of my patients unknowingly threw it into the cook stove with a bundle of papers and before the lid of the stove was replaced, the powder exploded tearing off the apex of the hollow paper bullet and caused a wound in the lady's face near the middle of the right cheek, passing an inch and a half under the tissue reaching the right nasal cavity. The paper bullet did not make the wound since it was not stained with blood and was found in the corner of the room. The spoon-like condition of the shell shows the action of the external pressure

of the air caused by the vacuum resulting from the rapid expulsion of the powder gas from the inside.

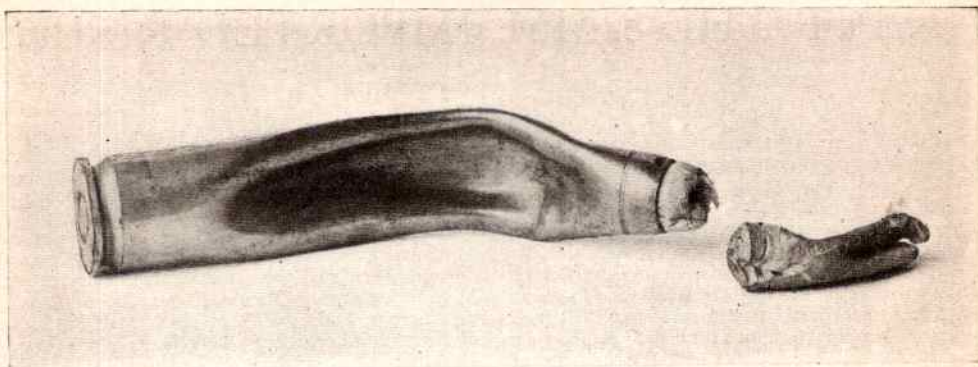
"The wound healed readily after being dressed with drainage.

"The peculiarity of this accident and the exhibition of the strength displayed by the powder under the circumstances narrated, have interested me much, and I would be glad to have you use this for publication if you think it is of sufficient importance."

On receipt of Dr. Abbott's letter accompanied by the discharged blank and fragments of the paper bullet, I was of the opinion that the wound was caused by a piece of the anvil of the primer having blown through the flash hole. This theory was based on experience of my own during black powder days, and wishing to satisfy Dr. Abbott as to what caused the wound, I wrote him as follows:

"I have just received your interesting letter of July 9th, with the remarkable exhibit enclosed. I will have the cartridge and paper bullet photo-





THE CARTRIDGE AS IT APPEARED AFTER THE EXPLOSION

graphed, and cuts of same published with your excellent description of the accident. I am convinced that your theory in regard to the paper bullet, is the correct one. It is obviously impossible that the paper bullet should have caused the wound, and it would be worth something to know beyond a doubt what did. My theory is that the wound was made by the anvil of the primer, or a portion of it, which was blown through the paper bullet, carrying with it, part of the latter, which was found in a corner of the room. About one-third of the paper bullet remaining in the neck of the shell secured by a groove. I am of the opinion that the anvil or the portion of it that caused the wound, was driven through the powder charge and center of the paper bullet by the fulminate, before the powder charge was fully ignited. It is an established fact that the energy of smokeless powders develops progressively, depending largely on the degree to which it is confined, and on the strength of the primer. This known property of the powder would account for the fact that the remaining portion of the bullet was not blown out, while a vacuum was created sufficient to buckle the shell inwardly.

"While recapping some .45-70 Springfield shells by hand, a few years ago, I inadvertently applied too much force to the handles of the recapper, forcing the arch of the primer down onto the anvil; the primer exploded, forcing half of the anvil through vent-hole in the primer pocket. I was seated on a bench with the mouth of the shell directed toward my left leg; the fragment of brass was driven with sufficient force to penetrate my overalls, trousers, and under-clothing, and imbed itself in my leg, midway between the knee and groin so deeply, that although I probed the wound with a crochet needle, to the depth of an inch, I could not locate the small piece of brass. I still carry the little souvenir.

"It would be easy to determine whether the anvil of the shell submitted by you is still intact, by cross-sectioning the base to the depth of the primer, but I would not do this without your permission."

An answer from Dr. Abbott gave me permission to cross-section the shell, which I proceeded to do with the following results: The anvil of the primer, the primer pocket and the flash hole were found intact; about 15 grains weight of unburned smokeless powder was found in the shell loose; several granules of unburned powder were matted together, evidently from the suction which caused the vacuum and buckled the shell, wedged tightly at the rear of the base of the paper bullet which remained in the mouth of the shell. The apex of the paper bullet plainly shows that some hard substance, sufficient to have made the wound, had torn its way through the paper bullet; several granules of unexploded powder compressed into a hard mass still remain in the hollow cylinder of paper in the neck of the shell and in the hollow of the detached portion of the bullet. I cannot imagine what caused the wound unless it was a pellet of unburned powder compressed into a hard mass by the force of the explosion. Another thing I cannot account for is how so much loose unignited powder could remain in the shell during and after the explosion of the powerful government primer. Dr. Mann gives the pressure of the U. M. C. No. 7½ primer as 36 pounds to the square inch or about double the normal atmosphere. The greater strength of the government primer might be sufficient to drive a mass of matted powder with force enough to buckle the shell and cause the wound, but could it do so without igniting the powder?

Will the brethren of the craft who are scientifically inclined, please give their opinions?





# ANENT THE 8 MM. IMPORTED RIFLES

By E. C. CROSSMAN

I HAVE received several letters recently in regard to supposed faulty boring of 8 mm. rifles sold in this country. The trouble has been of recent date, but there are many rifles now in use with the barrels much too large for the ordinary 8 mm. bullet. A case in point is that of Mr. T. R. Skerrett and Mr. Leon Dezert, both of San Francisco, who bought Waffenfabrik Mausers and found the barrels to measure over .320 inch instead of between .317 inch and .318 inch as they should to handle the Model of 1888 cartridge of 8 mm. caliber. These gentlemen wrote me their troubles and I advised them as I desire to now advise the readers of the Outer's Book, that since the change of the German military rifle to an arm handling the new Spitzer bullet, the rifles are bored .322 inch instead of the old .31750 inch.

I also forwarded to the two San Francisco gentlemen a German Spitzer bullet measuring .32250 inch to show them for what these barrels are now bored. Since that time the importers of the rifles at fault, Von Lengerke & Detmold, have written Messrs. Skerrett and Dezert, giving the information they received from the Mauser factory at Oberndorf in regard to the change, as follows:

We received your letter of the 17th inst., and in the meantime have also received a letter from Waffenfabrik Mauser and we can now give you an explanation regarding the difference in the boring of your 8 mm. Mauser rifle of which you complained. Since the German army adopted the Spitzer bullet, the size of the Mauser rifles was increased from 8.10 mm. to 8.20 mm. normal size. As soon as these bullets had been tried out there was a great demand on the other side for Mauser rifles which would shoot both the ordinary Ogival bullet as well as the Spitzer bullet and in order to do this they have bored a great many sporting rifles to the maximal size allowable for the Ogival bullet, which is 8.15 mm. and this caliber will shoot both Spitzer bullet and other bullets quite satisfactorily. It seems now that you have measured and tried your rifle with bullets which had the normal diameter allowable for that kind of projectile, and this accounts for the unsatisfactory results that you have received.

In order to give you the exact dimensions of the various bores for various ammunition we give you the following:

The bore of the barrel normal is 7.9 mm. or 0.31103 inch.

The bore of the barrel maximal, 7.95 mm. or 0.3130 inch.

For Ogival bullet, normal, 8.10 mm. or 0.3189 inch.

For Ogival bullet, maximal, 8.15 mm. or 0.3209 inch.

For Spitzer bullet, normal, 8.20 mm. or 0.32284 inch.

For Spitzer bullet, maximal, 8.23 mm. or 0.3240 inch.

You can see thereby that your barrel was bored for the normal Spitzer bullet and measures 8.20 mm., which is 0.32284 inch, which tallies with your measurement."

This explanation is rather lacking in clearness, to my mind, it simmering down to the statement that the barrels of the latest 8 mm. rifles of the Mauser factory at Oberndorf were bored for the new Spitzer bullet or .32284 inch and that some of them are bored but .3209 inch in the happy idea that they can shoot both the old style bullet, calibrating around .318 inch and the new Spitzgeschoss measuring .32284 inch. This is a very nice idea, but unfortunately it does not work out from what we know of the fit of metal patched bullets.

Either a bullet of .32284 inch in a barrel of .3209 inch will give good results—with perhaps an over-amount of friction and the bullet of .318 inch will prove too loose or else if we are to believe Dr. Mann and Sir Charles Ross, the bullet of .318 inch will expand to fill the grooves and the .3228 inch bullet will prove too tight and cause unnecessary friction and high pressure. That both of these bullets will give good results in this .3209 inch barrel is hardly probable.

Metal patched bullets may upset—it is hard to get around Dr. Mann's exhaustive experiments tending to prove this and the wonderful accuracy and life of the Ross .280 with bullets .002 inch too small. If they do, then the smaller bullet is all right for the .3209 inch barrel—and if they do the larger bullet is not at all the thing.

It looks like a very careless and slovenly way of turning out rifles. Were it desirable to use the new Spitzer bullet in the sporting rifle—the rifle made for the old Model of 1888 cartridges—it would be easy to make up this Spitzer to calibrate .318 inch and get good results in the barrels of the old size. Instead of this the makers proceed to turn out the barrels sort of a betwixt and between size that must be wrong with one or the other of the two different sizes of bullets.

Another point is that the German bullets are steel jacketed and naturally play hob with the barrel of the rifle in which they are shot. Particularly is this true when the bullet is .002 inch too large for the grooves of the rifle. The writer has a score of different patterns of German game shooting and military bullets before him and every one of them will cling affectionately to a magnet. This might be true if the core contained a little iron in the mixture, but unfortunately the German makers confirm the fact that they use a steel jacket—slightly coated with copper-nickel.

So far the fault has been confined to the products of the Mauser works at Oberndorf—better know in this country as Waffenfabrik Mausers—which means nothing more or less than "Gunfactory" Mausers. They are distinguished from other Mausers as being the product of the Mauser factory in every part, whereas many other Mauser rifles are built up of Mauser bolts and actions, with the barrels, stocks and other parts by the factory putting its name on



them. The Sauer-Mausers is an example of this, the Sauer Company buying their bolts and actions from the Mauser factory at Oberndorf and making the barrel and the remainder of the rifles themselves. In the case of the Sauer-Mausers, the Sauer factory has put out a better rifle than the Mauser works, which is devoted for the most part to the production of military arms and from which the Spanish and the Boer Mausers came some years ago.

Apparently the Mauser factory dropped the old style of barrel and is using a standard boring that is adapted to the German army cartridge ".32", using the new Spitzer bullet. This is all right as far as it goes but unfortunately our American factories make their 8 mm. bullets around .31770 inch—too small under our present ideas of the fit of metal patched bullets, for the barrels measuring either .3209 inch or .32284 inch. It therefore behooves the purchaser of an 8 mm. rifle to know what he is getting and not to take a rifle bored in any such way as these importers state. It savors much of "made for export," for which our German friends are famous. They can supply the German army Spitzer bullet loaded into the 8 mm. case at a very high price but these are steel jacketed and it is not the best policy to use such stuff in a rifle costing the nice sum of \$50.00 or even \$35.00.

For the benefit of the users of 8 mm. rifles it might be well to state that Spitzer bullets with cupro-nickel jackets, calibrating about .318 inch can be secured from the Rhenish Westfalian Explosives Company, of Nuremberg, Germany. The cost is around \$13.50 per thousand and they are adapted to the barrels bored for the old blunt point bullet of the 1888 cartridge.

So far the Sauer-Mausers has been bored right for the bullet obtainable by American sportsmen, the writer's being .317 inch for bullets around .31770 inch. If the sportsman is desirous of securing one of the Mausers of Oberndorf make, the writer suggests that he select a 7 mm. instead of the 8 mm. as these rifles are bored correctly and the cartridge is one that is hard to beat. In fact the writer would as soon use it as the 8 mm.

In the 8mm. rifle with the Spitzer bullet of Rhenish make, by using about 44 to 45 grains of

1909 Du Pont Military powder the user will get practically a New Springfield velocity. The Germans, by using 48 grains of Rottweil smokeless 1293 powder in this case and a bullet of 155 grains—the Rhenish No. 7-26 mm. long—develop a velocity of 2733 foot seconds, higher than the New Springfield. The owner of one of these 8 mm. rifles, by corresponding with the German makers, can easily obtain bullets and work out loads that will convert his rifle into a high velocity arm of the New Springfield class. The Du Pont Company have promised to give the writer the pressures and velocity of their Du Pont 1909 Military in the 8 mm. rifle that we may get some basis of comparison between the German Rottweil powder and the powder obtainable in this country. It is safe to say that the Du Pont 1909 is the finest powder in the world at present for its purpose and as soon as the results of the tests of this company are given to the writer, the army of foreign 8 mm. rifle owners will have something definite on which to work to obtain New Springfield velocity with their rifles. The DuPont people say that it will be safe to use about 44 grains of the 1909 DuPont behind the light German Spitzer bullet for this caliber. How much more can be used safely the tests of this company will demonstrate.

It is a little amazing to one corresponding with the various importers of arms into this country and attempting to get an arm that is bored the way he wants it, or to get some definite information, to note the entire absence of knowledge pertaining to the technical part of the rifles. The importers know that their rifles are bolt action arms and know the calibers. They are deficient in even the nomenclature of the arms and their description of the working of the rifles is sometimes quite amusing. While they are business men and not gun cranks, yet it is doubtful if an importer of machinery could make much headway were he entirely unfamiliar with the technical details of his business.

When a man is crank enough to pay from \$40.00 to \$75.00 for a rifle, he is very likely also crank enough to want to know something more about it than merely that the pulling back of the bolt extracts the empty cartridge and its forward movement inserts a fresh one.

## OF INTEREST TO RIFLEMEN

THOSE of our readers who are so fortunate as to own a New Springfield rifle, will be pleased to learn that Von Lengerke & Detmold, of New York City, are completely equipped to apply sporting stocks to those famous rifles. This firm has had considerable trouble securing the proper wood for these stocks, as none of the blocks imported regularly, are long enough, and all the wood of the quality used for this purpose has to be specially imported. Von Lengerke & Detmold use the beautiful fancy Italian wood only, and the stocks are made with checkered grip and forend in full pistol grip, half pistol or straight grip, and most of the stocks are made with cheek pieces, by means of which the line of sight is automatically and positively directed

squarely over the center of the bore. The top hand guard is fastened with two spring clamps and is detachable. The top of the hand guard is flat and neatly checkered. As most riflemen use different drops of stock and different lengths, these stocks are made to order only. Instead of the army sight originally on these rifles, the Lyman wind-gauge receiver sight and ivory or gold bead front sight may be applied. A fair idea of how the rifle will look when equipped with sporting stock and sights, may be gained from the accompanying cut. Parties wishing to have their spring-fields re-stocked in time for the fall hunting season, will receive prompt attention. Von Lengerke & Detmold, Fifth Avenue Building, between 23d and 24th Street, New York City.



# THE STEVENS-BROWNING PUMP GUN

FASHION is responsible for many changes, some of which will bear a logical analysis and become fixed institutions in our lives, while the faults of others are so obvious that they are soon relegated to the scrap heap of forgetfulness. The reason why fashions in firearms change less frequently than those in other lines, is because in the building of powder burning weapons, every thing is designed with a definite object in view, and for this reason its use is prolonged until superceded by a more practical invention or a newer type. The single barreled gun was superceded by the double barrel and the muzzle loader by the breech loader. The double breech loader perfected by the combined efforts of both manufacturer and consumer, long held first place in the affections of progressive sportsmen but with all its traditions of speed in action, facility in reloading, beauty and simplicity of construction as well as many other commendable qualities it seems predestined to displacement by the already famous type often contemptuously referred to as the "pump gun." The principle of the multishot arm having but a single barrel, as exemplified by the earlier types of repeating rifles, was responsible for the appearance of the repeating shotgun. The first of this type of arms to receive the endorsement of shooting men was the Spencer. This gun was the joint production of C. M. Spencer, inventor of the Spencer Repeating rifle, and S. M. Roper, another expert on firearms. This arm was actuated by the forend or trombone system, a type which since its invention, in 1883, has steadily grown in public favor. No stronger endorsement of this system could be had than the fact of its adoption, in various forms, by all the great armorers of America for their latest models of rifles and shotguns. About 20,000 of the Spencer pump guns were built and sold when their manufacture was discontinued. The advantages of the sliding forend as an actuating medium had been clearly demonstrated, however, and the system soon made its appearance on an excellent line of rifles manufactured by the Colt Co. About this time the repeating shotgun idea received a further impetus among practical hunters by the appearance of the Original Winchester Lever action, which was soon followed by their Model 1893 "pump." This was a forend action, and although it was enthusiastically welcomed by the hunting contingent, it was not until the issue of the Model 1897 take-down, that the pump gun began to make its influence felt in the long grueling contests at the traps. For many years after the less critical knock-about game hunter had discovered the long range, straight shooting, hard hitting, enduring, dependable qualities of the single barreled pump gun, it was rarely seen among the more fastidious and exclusive ranks of the trap shooters. Fortunately there were expert shots among the hunters who were curious to know whether the pump gun

would do as well at the traps as on a duck marsh and right here let me say that the duck marsh comes near being the supreme test of not only the shooting qualities of the gun, but also the marksmanship of the hunter. The performance of the plebian pump gun in the hands of unprejudiced men who knew how to use them, soon compelled the respect and admiration of those who had long been partial to the more elegant and expensive guns of earlier types. The obvious simplicity of its mechanism, the excellence of its performance, the advantage of speed and reserve fire were some of the factors which determined the status of the pump gun and helped to establish its title against a firmly rooted sentiment in favor of the slower but more shapely double guns. While the Spencer and other types of the repeating shotgun may have blazed the way for this unique type of arm, it was not until John M. Browning touched the pump gun with the wand of his inventive genius that it came to stay, destined to become a permanent fixture and a dominant factor in the shotgun world. To the real gun lovers of today the name of Browning is synonymous with all that is progressive, original and versatile in the field of invention as applied to modern firearms. His inventions cover the entire list of repeating and automatic weapons, and one would be wholly within the domain of fact in saying that more firearms of progressive types, the product of John M. Browning's prolific genius are in use throughout the world at the present time than any other inventor, and he is still busy. The first successful pump gun, and the one which was instrumental in educating American sportsmen to appreciate the good points of this most practical of all the scatter guns, was a Browning invention. It is therefore altogether fitting that the latest model of this type to receive the stamp of approval by discriminating American gun users should also carry the legend: "Browning's Pat. 1907." This, the very latest production in the pump gun family, is being manufactured by the J. Stevens Arms & Tool Company, Chicopee Falls, Massachusetts. The Stevens Company needs no formal introduction to the shooting fraternity, as the output of that great armory has helped to make shooting history wherever firearms are known and used. The new Stevens repeating shot gun is made in three grades and in 12 gauge only. The standard grade, or No. 520, is regularly issued with full choke 30-inch barrel, pistol grip, walnut stock and slide handle. The dimensions of the stock, as adopted for the standard gun, are: length, 13 $\frac{1}{2}$  inches; drop at comb, 1 $\frac{1}{2}$  inches; drop at heel, 2 $\frac{1}{2}$  inches; the stock is equipped with a neat rubber butt plate; barrels can be had cylinder bored, modified-choke, or full choke, and in 26, 28, 30 or 32-inch lengths, as specified.

No. 522 is the trap shooter's grade. The barrel is 30 inches long, made of Stevens compressed



## The Stevens Browning Pump Gun

forged, high pressure steel, bored for nitro powder and fitted with a hollow matted rib and bored full choke only. The stock is of fine, fancy walnut, straight grip checked, finely finished; rubber butt plate; length of stock, 14 inches; drop at heel, 2½ inches; drop at comb, 1½ inches; the slide handle is of fancy walnut, checked and finely finished. The trap grade weighs 7½ pounds and is a very handsome and serviceable arm.

No. 525 is Stevens' "De Luxe" grade. The barrel is of the Stevens compressed forged, high pressure steel, bored for nitro powder. The barrel supplied regularly is 30 inches long, full choked, but can be furnished in 26, 28, 30 or 32-inch lengths and bored as desired. The stock and slide handle are of fancy walnut, beautifully checked and finely finished. On this model considerable latitude is allowed the purchaser in the

with the barrel at the take-down joint, adds to the length of the sighting plane a feature which helps materially to accuracy of aim. The top of the receiver has a matted finish which, with the hollow matted rib on the barrel, prevents radiation of heat or sunlight. The upper end of the magazine tube is secured by a steel lug brazed to the under side of the barrel. The beautiful sweeping taper of the barrel is nowhere marred by unsightly bands, or weakened by cuts, or screw holes. A most ingenious take-down system has been adopted for the new Stevens that will at once commend itself to lovers of the practical in mechanics. A solid block of steel, ¾ of an inch thick and 2½ inches long, is provided, into which the breech end of the barrel and magazine tube are screwed permanently; a number of broad, deep grooves and lands are milled on the outside of the block and a correspond-



THE NEW STEVENS-BROWNING PUMP GUN

way of variations from the regular specifications. Stocks can be had with straight grip, or with full or half pistol grip and with drop at the heel from 13½ to 14½ inches. While outwardly resembling the earlier models of Browning repeating shotguns in a general way, the Stevens is an entirely new invention and wholly different from any other arm of its type. The action is simplicity itself, consisting of but four principal working parts, the breech bolt, the locking bolt, the slide, and the lifter or carrier block; all of the working parts are enclosed within the walls of the receiver, which are of solid drop-forged steel, averaging 7-16 of an inch in thickness, except at the top where the frame is pierced to receive the locking bolt; at this point the top of the frame is ¼ inch thick; the opening to receive the locking bolt is ½ inch square, and when the breech bolt is in the

ing number are milled in the end of the receiver. When assembled the grooves and lands of barrel and receiver engage snugly into each other, and, having long, broad and deep bearing surfaces, friction is impossible. A compensating nut is provided which is forced against the receiver by turning the magazine tube. The compensating nut is provided with wedges which intersect the lands and grooves on both sides so that the gun, when assembled, is safe and solid, rigid as a bar of steel and can never work loose. The magazine tube forms a guide for the slide handle; the latter is metal lined, with steel caps at both ends, screwed firmly against the ends of the walnut slide handle, so that it cannot work loose or split. There are no small screws requiring metal bushings, used in its construction. The following are some of the features of the new arm that will appeal to the



THE HOLLOW MATTED RIB OF THE NEW GUN

forward position and locking bolt in place, the breech bolt is locked in a direct line with the axis of the bore and secured by half an inch square of solid case hardened steel. The breech block is milled from a solid block of steel, also case hardened. When the action is closed the base and rim of the shell are completely covered by the face of the breech block; this, with the solid, unbroken walls of the receiver renders it impossible even with defective ammunition, for powder gases, residum, hot gun grease or other accumulations, to blow back into the face of the shooter. The barrel is strongly re-inforced at the breech by an extra thickness of metal; when to this is added the massive steel frame of the receiver, it forms a combination for chamber strength that cannot be surpassed. The receiver is six inches long and being flush

veteran as well as novice. It was designed by John M. Browning, an American inventor of international prominence, whose every invention in the line of firearms has been a success. The mechanical principle of the arm is correct. Strength is provided where strength is required. There is a symmetrical distribution of weight. The arm is well balanced, graceful in appearance, and handles well. In ease of manipulation it is a revelation. This is due to its long and direct leverages, smooth bearings and perfect mechanical principle. The locking block is level with the top of receiver when action is closed, and its position can readily be determined by day or night. The safety is located in the trigger guard just forward of the trigger; it is positive in action, always accessible and, protected as it is by the guard, cannot be



shifted by accident. The firing pin is controlled in its movements by the locking bolt; the gun can be fired only when the action is completely closed and locked. At the first movement of opening the action, the firing pin is drawn to the rear, the

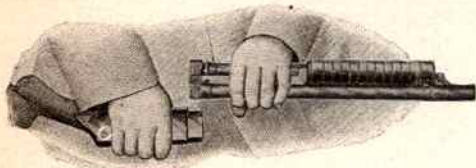


FIG. 1

shoulder of the locking bolt drops into contact with a corresponding shoulder on the firing pin. Only the positive motion completing the closing movement will release the firing mechanism. When the arm is in use the slide handle is unlocked by the recoil immediately after the discharge of the shell, and by the backward motion of the slide handle; the discharged shell is drawn out of the chamber, and at the same time the loaded shell starts out of the magazine and moves back onto the lifter. By this method the gun can be fired without clogging, as fast as it is possible for a shooter to work the slide handle. The empty shell is ejected from an opening in the right side and is thrown free of the receiver before the lifter carries the loaded shell upward and forward with the closing movement of the slide handle. The

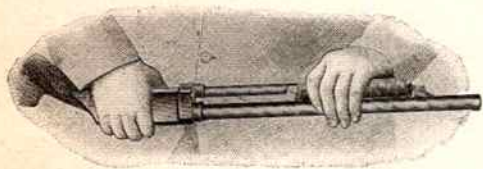


FIG. 2

receiver is perfectly smooth on both sides, only the slide lock button appears above the surface, and there is no unsightly projections anywhere to catch in the clothing or bruise the shooter's hands. The superior mechanical system of this arm deserves first class material, workmanship and finish. The metal parts are finished in black oxide, which gives the gun a beautiful appearance and a durable color. Two strong extractor hooks are firmly pinned to the right and left sides of the sliding breech. The empty shell is caught on both sides, drawn straight to the rear until tripped by the ejector block and flipped through the ejector



FIG. 3

port. By this system there is less danger of the extractor hooks cutting through rim of the shell, or the base pulling off by a side strain. Ejection is clean and positive. To use a single loader, it is only necessary to drop a cartridge into the receiver and close the action. The arm is chambered for a 2½-inch shell, and is guaranteed against defects in material and workmanship, and for accuracy with any standard make of ammunition. To put gun together, insert the thread on the barrel into the grooves in the receiver. See Figure No. 2. Guide handle bar into receiver until it snaps into position as in figure No. 3. When

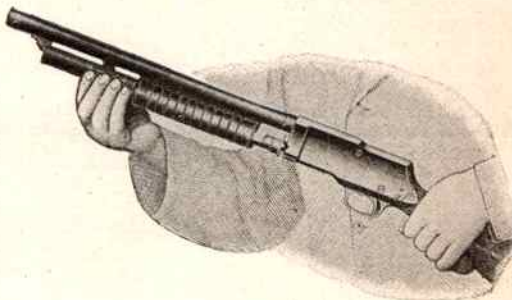


FIG. 4

barrel head is flush with bottom of receiver, turn magazine tube by milled surface (see figure No. 4) until lock nut wedges into grooves on sides of receiver. Be sure magazine tube is turned down as far as it will go. To take gun apart: Push button on left side of receiver forward (see figure No. 5) until slide handle is pulled back as far as it will go. Unscrew magazine tube by milled surface (see figure No. 4) until nut lock is out of grooves. Grasp receiver in one hand and barrel in the other and pull barrel out of receiver until stopped by slide handle lever. (See figure No. 3). Draw slide handle as far forward as it will go (see figure No. 2). Grasp receiver in one hand and barrel in other and finish pulling barrel out of

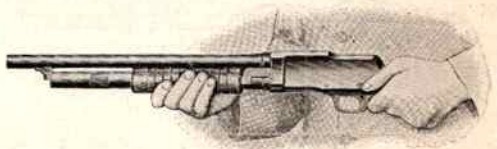


FIG. 5

receiver as shown in figure No. 1. To take the gun apart no tools are required, no force is necessary and the trick can be accomplished in less than ten seconds. For convenience in carrying or traveling, the arm can be packed in a case the exact length of the barrel.

Basing our statement on a thorough personal examination and on reports received from those who are using the new pump gun, we are pleased to say to our brother shooters, that the Stevens Company's high standards for material, work-



## Two Historic Weapons

manship, fitting and finish, are fully exemplified in the new Stevens repeating shotgun. It is seldom that the gun editor, in reviewing a new arm, will go out of his way, looking for weak points or defects; yet that is just what was done in this

case. After diligent inquiry among hunters, trap shooters, dealers and repair men, the writer has yet to hear a single adverse criticism, a failure to function, a break down or a weak point developed anywhere in the new Stevens Repeating Shotgun.

## TWO HISTORIC WEAPONS

FOR the earnest student of firearms and for all genuine gun lovers, nothing has a more absorbing interest than the antique specimens found in private collections and in public museums. While every distinct type of arm, and even slight individual variations from type, are invested with certain special attractions, it is the original inventions which clearly mark the evolution of firearms on their merging from one system to another. It is an unfortunate circumstance that

with permission of Francis Bannerman, "The Gun Man," we are able to place before our readers descriptions of two weapons of historic interest, representing different types. The first is one of a pair of English duelling pistols made by Forsythe & Co., Patent gun makers, London. John Alexander Forsythe was a Scotch clergyman, fond of shooting, who discovered the idea of the percussion gun in 1805 and took out a patent for it in 1807. Forsythe refused Napoleon's offer of 20,000 pounds

for his invention. The British government assigned him room in the Tower of London, to perfect the percussion cap. A year later, on change of administration, he was ordered to clear out with his rubbish. In 1809, to introduce cap weapons, he joined with London gun makers



PERCUSSION DUELLING PISTOL

most of the types that have become famous and were used in the great wars of history, were invented during periods of great social or political unrest or under the spur of dire necessity; conditions under which much of value in regard to their history was overshadowed by greater events, and not being recorded, was lost to posterity forever.

It is the purpose of the writer to publish from time to time cuts together with a brief but authentic

to make rifled guns, when this set of pistols were made. The first official test took place in 1832. These historic pistols are the forerunners of all modern weapons. The barrels are ten inches long,  $\frac{1}{4}$  inch smooth bore. Heavy octagon twist, rear sight, platinum band at breech, silver name and side plates and fore end cap, safety hammer attachments, engraved lock and mountings. The barrel is inscribed "Forsythe & Co., Patent Gun Makers, London."



ANCIENT KING'S WHEELLOCK GUN

history of such arms as in our opinion will prove of interest to a majority of our readers. There are many sources of information, on this subject, accessible to the Outer's Book, but in order that the matter published may not seem local or circumscribed in scope, we invite those who have private collections, or a knowledge of anything unique or rare in firearms, to contribute to this feature of our gun department. Through the courtesy, and

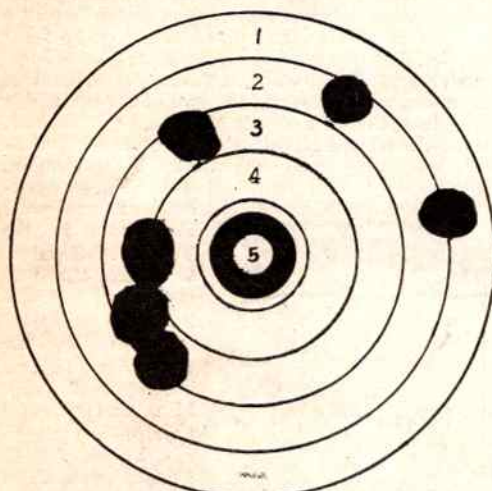
Forsythe was the son of the parish minister of Belhelvie, and was born in the manse there, on December 28, 1768, dying there in 1843. He was educated at the university of Aberdeen, and varied his ministerial tasks by the study of chemistry and mechanics." "The second cut represents an ancient wheel lock gun which evidently once belonged to the King of Montenegro, upwards of 400 years ago." Wheel lock arms were first used



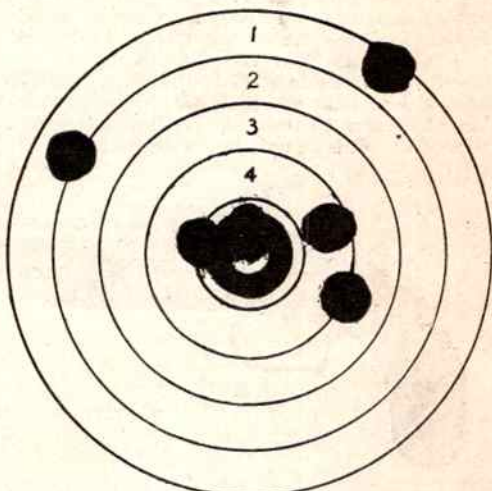
about 1510; their invention is credited to Nueremburg, Germany. In earlier forms of firearms, ignition of the charge was accomplished by actual fire being placed in direct contact with the primed vent of the weapon by hand. The match lock followed this, which in its turn was displaced by the wheel lock, which was the first form of the flint lock. The wheel lock gun illustrated here is an exceptionally handsome specimen of its type. It has a handsomely ornamented barrel, every inch of which is covered in relief with figures of men and women in ancient dress, with scroll work, with *Crown* surmounting *Double-Headed Eagle*, with small crowns on the eagles' heads. Showing

that at one time this gun belonged to some ancient king. The guard plate is similarly ornamented with crowns on the eagles' heads, etc. The full length of the gun is 53 inches. It is 6½ inches wide at butt stock, which is of curly walnut, with open ornamented brass work on the cheek piece, showing mounted huntsman with bugle horn. This gun is an exceptionally fine specimen of the ancient gun builders' art. It was appraised by the United States custom officers and passed duty free as a work of art. One of the objects of this corner of the gun department is to put collectors and gun fanciers in touch with each other for mutual benefit.

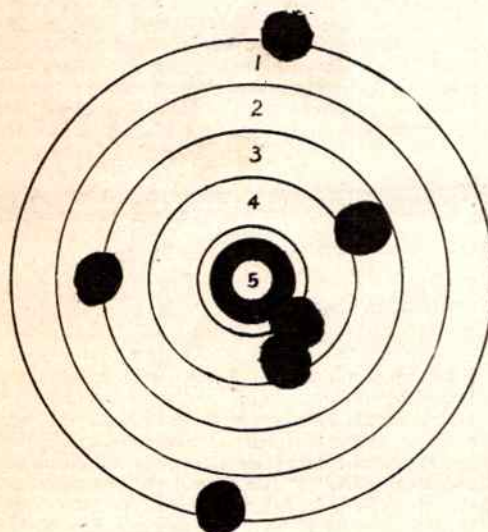
## SOME GOOD REVOLVER SHOTS



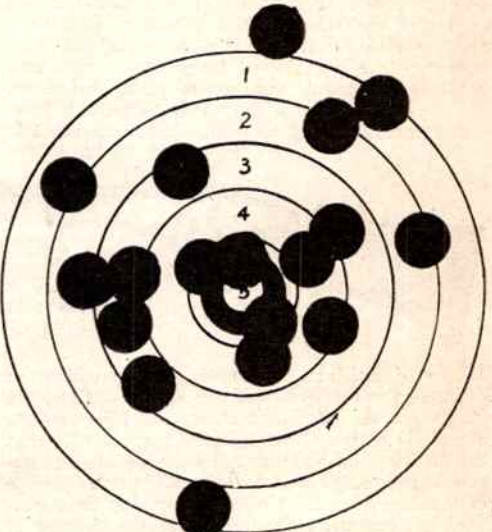
NO. 1



NO. 3



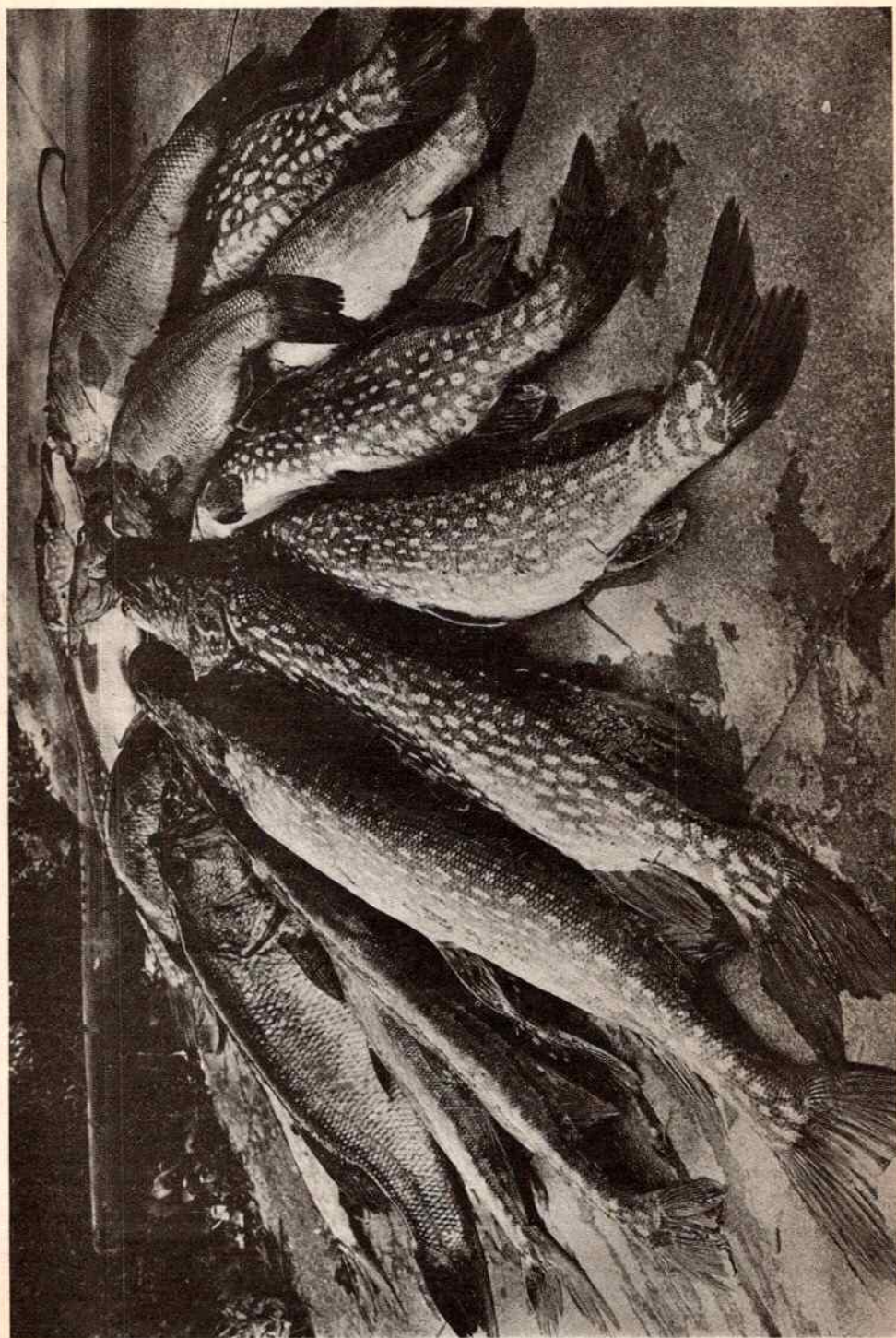
NO. 2



COMPOSITE OF NOS. 1, 2 AND 3

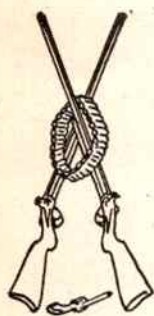
Three targets made at 25 yards with a Colt's Officer's Model Target by Dr. C. C. Curnalia, of Roscommon, Mich., and a composite of the three targets.





A LAKE MINNETONKA, MINN., CATCH, MADE BY DR. J. M. BEFFEL OF MILWAUKEE





## GUNS AND AMMUNITION

EDITED BY ROBERT A. KANE

This department is intended to be a place for the exchange and discussion of views on any subject pertaining to arms and ammunition, from which no one with an idea to advance shall be barred. The only conditions are that the opinion must not be manifestly absurd, that it be expressed in courteous language and that no personalities be indulged in. Each opinion is printed for what it is worth and its publication does not commit the editor to the view expressed. The widest range will be permitted and our readers are invited to make free use of these pages, but it is important to remember that *under no circumstances will personalities ever be permitted.*



# THE STANDARDIZATION OF THE .22

*(Reprinted from Arms and Explosives)*

A GOOD deal of interesting correspondence appears to be taking place just now in the miniature shooting world upon the question of the standardisation of cartridges, which is surely rather putting the cart before the horse. Theoretically, the rifle existed before the cartridge, but perhaps in practice the process of self-adjustment should be mutual, and it is the object of this lecture to point out those defects of the rifle, which unnecessarily hamper the ammunition maker in his efforts to achieve perfection. It is reasonable therefore, that the principle of standardisation should first be applied to the elimination of the most serious of the defects, viz.: that of misfires and weak ignition. There is no intention to deny the causes of misfires as far as the cartridges are concerned, but at the present moment this may be put on one side by assuming that the cartridges are correctly primed and that the dimensions of the case are up to standard, notwithstanding which misfires are resulting.

For the purpose of building up a tangible theory of ignition it may be assumed that an explosive is a chemical compound in which the molecules are bonded together very feebly to form the various ingredients, the breaking up of a single atom of the composition causing liberation of heat or force, which quickly communicates to other atoms, causing in turn their decomposition, this action proceeding throughout the mass with such rapidity as to form an explosion. Mechanical shock is one of the means of producing the initial severance, although it is not always easy or possible to produce the effect by this means. The sudden raising of an explosive to a given temperature is, perhaps, the more certain method. In other cases, violent shock, produced explosively or mechanically, is the means necessary for starting explosive decomposition. In ammunition, a combination of methods is easily adopted. One explosive, the priming, is struck mechanically,

and the flame thereby produced is allowed to impinge on the other explosive, the propellant. The decomposition of explosives by percussion, therefore, is not so much due to mechanical force pure and simple as to a secondary cause, viz., the heat incidentally produced by the friction of particles one against the other when suddenly struck. The incidental production of gas has also its mechanical aspect, and serves to accentuate the shock effects when once they have been properly started. Various ingredients are inserted in the priming to increase the friction, thereby enhancing sensitiveness and aiding the production of the necessary temperature to start decomposition.

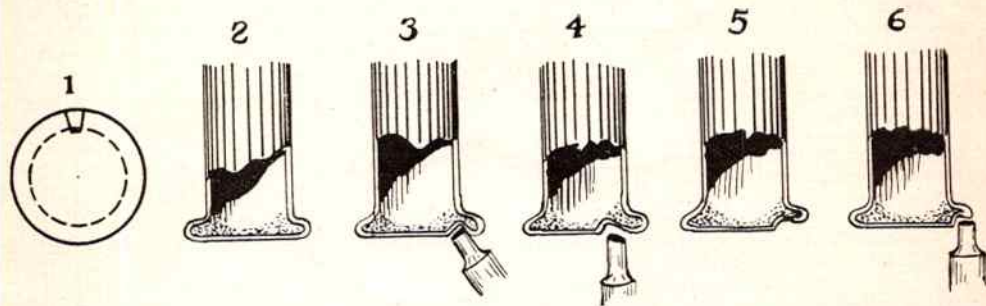
The hard crystalline nature of fulminate of mercury for a similar reason causes this compound to be more sensitive to percussion than would be the case if it happened to be of a soft amorphous nature. The sensitiveness of a priming composition or material is therefore due in some manner to both its mechanical and physical properties.

In the cleavage of certain crystals, subtle effects difficult to express in words are doubtless produced. The mere breaking in two of a crystal of a substance like fulminate of mercury may generate sufficient heat to start decomposition, but the effect, though originating mechanically, is in reality thermal. Heat varies in quantity as well as in intensity, and experience shows that in order to gain a positive ignition, it is inadvisable to rely upon the cleavage of a single crystal of fulminate of mercury. For the action to be positively started and capable of immediate self-propagation, the initial action should cover a sufficient area as well as have the necessary intensity. For this reason, the striker of the rifle should be sufficiently large in area to apply the shock to a plurality of crystals. It is also essential that the primary ignition should be regular, and this again is governed by the cleav-



age of an average number of crystals. It is well known that a weak ignition will cumulate slowly and give a delayed explosion. This is the main cause of hangfires, for the propellant will ignite almost in the same ratio as the igniter. A weak ignition will often cause incomplete burning of the powder charge, and although there may be a sufficient explosion to expel the bullet, the effect will be

case. There should be no departure from this rule whatever. It will be found in the case of a rim-fire cartridge case that the recess in the rim is exceedingly small. The amount of composition which is pressed therein is very limited, and it is essential that great care should be taken to ensure that the striker should cover this particular area. The wall of the case is to all intents and purposes the anvil,



No. 1—Showing base of shell; a correct form of plunger point, with imprint of same properly placed. No. 2—Shows uniform disposition of fulminate in rim of shell. No. 3—Shows indirect blow of plunger, a prolific cause of miss-fires and weak ignition. No. 4—Shows faulty construction of breech mechanism permitting plunger to indent shell inside of the point at which it would meet with resistance from wall of shell supported by the chamber. No. 5—Shows shell compressed at proper point of contact ensuring strong, quick ignition. No. 6—Shows point of impact too near outer edge of rim where force of blow is expended on double metal of shell without results.

shown by an unusually fouled barrel, and in extreme cases by dropped shots on the target. "Stringing" of the shots on the diagram is observable in minor cases.

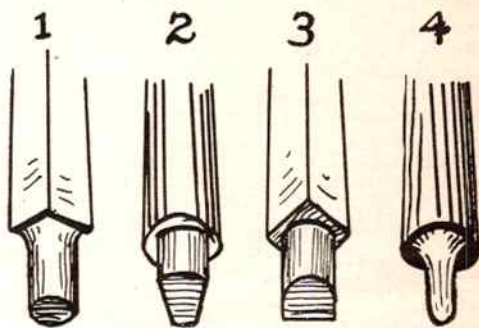
Having thus traced the effects of a normal and a slow ignition, the rifle must next be examined to find out what is most frequently the cause. It must be borne in mind that there are various degrees of friction, and that a composition containing fulminate of mercury will stand a good deal of compression and squeezing without generating sufficient friction to fire it. Thus, for instance, an ordinary percussion cap will stand a pressure of 500 or 600 pounds on the composition from a punch travelling at 35 to 45 inches per minute. Similarly a rim fire cartridge will stand a proportionate force from a steel plunger which forces the composition into the recess formed by the rim; so that when friction is referred to, it should be understood that it must include the necessary element of shock, otherwise the operation of inserting the priming would undoubtedly explode every charge.

The gunmaker is, therefore, called upon to decide first, the area of his striker, second, the length it projects from the breech face, third, the force of the striker spring in relation to the weight of parts set in motion, and fourth, which is most important, the position of the striker.

As regards first the position of the striker, an examination of a great number of rifles, both English and foreign, suggests that this matter has apparently received very little attention. With regard to many of the commoner foreign rifles, the defect may be traced to the slovenly way in which the components are thrown together, but there are also many English rifles where the workmanship is so good as to leave no doubt of the ill-informed intention of the maker. *The correct position for the striker is in alignment with the wall of the cartridge*

and the cleavage of the crystals must be effected by the percussive force exerted between the point of the striker and the base of the wall of the case. An illustration here appears showing the correct position for the impact of the striker.

If the striker is set too far out, that is, too near the edge of the rim. The initial percussive blow



No. 1—A good form but liable to puncture case, causing blow back. No. 2—One of the best forms yet devised and one almost universally adopted by American armorers. No. 3—Requires strong main spring or heavy hammer. No. 4—Not a desirable form, sometimes used in military actions, liable to displace priming without exploding, will also puncture cases more readily than the other forms shown.

is mostly expended upon the compression of the metallic wall of the rim, and the diminished force has a tendency to expel the composition from the rim inwards. The percussive blow is converted into a squeezing action, and ignition becomes uncertain and rather weak. This may not be an altogether unsatisfactory position for the striker



for some of the foreign makes of cartridge where the percentage of fulminate of mercury is exceedingly great, and the composition proportionately more sensitive. An excess of fulminate beyond that necessary for the ignition of the powder is undesirable for another reason, viz.: the tendency to cause burst cases. The accompanying view indicating a striker set too far out shows how the metal receives most of the blow.

The defect of having the center of the striker inside the walls of the case is possibly the worst of all. This particular defect is, apparently, exclusively confined to bolts fitted to service rifles for the aiming tube adaptor. It does not matter so much if the area of the striker which impinges directly upon the case is sufficiently large to cover the rim, but in the case of a round-nose striker, acting where the fulminate priming has no metal to back it, as in the adjoining illustration it is only to be expected that the priming composition will break away, and misfire. It is quite possible that the striker is sufficiently strong to close up the rim, but this happens too late to be of any real service.

The next illustration represents an attempt to show in progressive stages the ineffective action of a striker acting too near the center of a rim-fire cartridge. The first view shows the firing pin point indenting the base of the cartridge, and tending to break away the composition. The second view suggests that the large area of the striker is beginning to check the forward movement though actual percussion has still to be accomplished. The third view shows that the rim has been closed up, and only a very small layer of composition brought, so to speak, under the hammer. At this stage moreover, the velocity of the striker blow must be so far diminished that the required shock value has given place to a squeezing action, similar to that of the punch which first squeezed the composition into place.

Having now discussed the position of the striker, the next most important feature is its shape. It has already been explained that a certain area is necessary, and it will be seen that a form of striker of adequate area is objectionable. A cone or cone point, an acutely rounded point of any form, or anything of hatchet shape, is undesirable as it does not operate on the necessary number of crystals. The area of the striker is to some extent limited by the resistance offered in indenting the metal base of the cartridge case. Thus, although the igniting composition needs to be struck over as great an area as possible, the limits are determined by the resistance. It is suggested that the minimum area, without regard to shape should be one square millimeter, which is rather less than a square twentieth of an inch, or .045 inch diameter for a round pin. Reasons may be advanced in favor of a rectangular form, which, without being exactly rounded at the edges, should have the sharp edges taken off, so as to avoid cutting the metal and causing bursts. Part of the face might be at a slight

angle so as to concentrate the force of the blow on the thin metal. An ideal form of striker would be one having the same kind of surface as that of a mechanic's hammer which has had the edges carefully smoothed away, at the same time leaving the largest possible area with a nearly flat surface. Such a hammer may be used freely on finished work with a minimum risk of leaving the unsightly marks which a square-edged hammer is bound to make, however carefully it may be used. Returning to the striker the requirements are a maximum proportion of the surface very nearly flat, gradually dying away at the edges so as to avoid distressing the metal of which the cartridge rim is formed.

The length or projection of the striker should not exceed the minimum thickness of the head of the cartridge case and the strength of the striker spring should be insufficient to pierce or distort the base so as to cause bursts.

In order to standardise his strikers the gunmaker should test them with a selection of the best known cartridges, and he will find that in adjusting the weapon to fire one make of cartridge, he will overcome the difficulties in all. For a few shillings he can construct an efficient rest, by means of which he can conduct his tests. When he observes a tendency for the shots to make tall narrow groups he will know that the ignition is weak or irregular. As a rule it is only necessary to flatten the nose of the striker so as to enlarge its area. On the other hand, if the area is already so large that the striker blow is partly received on the metal head, an apparently different cause produces exactly the same trouble. The following illustration may be of interest:—A rifle was complained of as having given very bad shooting and the cartridge makers were communicated with. On testing the cartridges in the rifle, there was no doubt that the complaint was well grounded. At one hundred yards it was not possible to keep the shots upon a sheet of foolscap. The striker was of a hatchet shape, with a very sharp edge striking the rim radially. The striker was consequently ground down to one millimetre wide, and, using the same cartridges, the shots grouped themselves in a two-inch circle at the same distance. The sharp point of the striker was too small in area to cleave sufficient crystals to obtain an average ignition.

The cartridge maker, for his protection, invariably tests his output by carefully checked tests. The case is first tested empty by dropping a weight a prescribed distance on to the rim and ascertaining that the indentation is regular. After priming, ignition must take place by a similar test with a minimum blow to prove sensitiveness, after which the cartridges are tested in a rifle giving a maximum blow. It is desirable that the gunmaker should follow on the same lines. Each rifle should be tested to see that the indentation on an empty cartridge case is regular, and subsequent proof with complete cartridges should give a regular diagram.





# THE POLICE AUTOMATIC

By B. G.

**I**N the last several months, I have been called upon by several Police departments to investigate the merits of automatic pistols for police use, as compared with the ordinary double action revolvers now in use. These investigations have extended over a considerable period of time and as my reports on this subject have now been acted upon by the certain departments that ordered same, I feel that the shooters in general would be very much interested in the results of such an investigation.

I have found that the reliability which is the most essential point in police weapons, is just the same in the automatic pistol as in the double action revolver. The usual complaints against automatic pistols as to their reliability have usually been caused by the unfamiliarity with automatics by their users. Policemen have been given these weapons to use and carry without any instructions whatsoever and are expected to do good work with them. Now I should like to ask the question: would anyone for a moment think of driving an automobile in crowded streets without any instructions? No. Well a loaded pistol is just as dangerous, therefore the users of automatic pistols should first thoroughly acquaint themselves with the mechanism and use of these arms before they attempt to use them.

In choosing a weapon of this kind it is always best to choose a type of arm that is positively locked till the bullet has left the barrel and of such construction that it readily can be taken apart and cleaned. There are numerous automatic pistols where this is quite impossible on account of their complicated construction and innumerable small screws and springs. The feel and fit of the grip or handle is a matter of great importance in such work as a policeman does, which is generally done under the stress of great excitement and hurry, also most probably at night when the sights on a gun are of little or no use. Another and almost as important matter is the selection of proper ammunition like the Savage or Winchester make. It has been my experience that these two makes are supreme for their regularity in both powder and charge, also their primer is well made, which is most essential for the proper functioning of automatic pistols.

Before attempting the use of these arms, it is well to remove all heavy grease and to give the action a slight coating of a thin and pure gun oil, of which there are several excellent kinds on the market. After having put these arms in proper condition, it is well to practice with them empty so as to get used to their trigger pull, sights, etc. One of the best points in automatic pistols is that they are practically like a single action revolver, where the loading, ejecting and cocking are done

by the explosion of the ammunition leaving nothing for the trigger finger to do but to exert a slight pull on the trigger. This operation in a double action revolver requires a pressure anywhere from ten to eighteen or twenty pounds, thereby causing considerable derangement of the aim.

After becoming thoroughly familiar with the weapon, load it preferably with ten cartridges if you can get a weapon of such type, as it is usually of better balance than one with only six or seven cartridges in the magazine. The ten shot arm has another good point and that is that a policeman having ten shots at his command need not carry any loose cartridges in his belt or pocket, thereby running no danger of an explosion through either a fall or a blow, and in cold weather he need not remove his heavy gauntlets to reload as he would with a weapon carrying only half as many cartridges. Then if he cannot get his man in ten shots, he might as well let him run.

The superiority of the automatic pistol in a great measure is on account of there being no escape of gas between the cylinder and barrel, as in the revolver, which amounts to anywhere from 20 to 30 per cent at least, even in the best makes. In the ordinary revolver, when it gets worn considerably, there is a trouble arising which has puzzled many shooters of same in that it has lost its accuracy. This loss has been caused by the cylinder and barrel not aligning up correctly, through a slight wear on the notches in the cylinder. This is one important fault which is not apparent in the automatic.

Rust has always been a great factor when using an ordinary revolver, as very often an almost invisible film of same would adhere to the front end of the cylinder, thereby causing a complete block in the action. Sometimes this film of rust is so thin that it is hardly visible to the eye, but causes trouble just the same. Very often the space between the different chambers of a cylinder in a revolver are not bored just alike causing inaccurate shooting and great difference between the penetration of the various shots. In the construction of the automatic many of these drawbacks have been overcome, one of them being that very little fouling gets into the action, especially as no black powder can be used in them. The firing pin exerts a direct blow on the primers, thereby causing a sure discharge every time. In the revolver it is charged with a primer usually caused by a sweeping blow of the hammer which often buckles the primer causing it to expand and jam the cylinder against the frame to such an extent that very often two hands must be used to either pull the hammer or turn the cylinder.

The accuracy of an automatic pistol, especially in rapid fire is much greater than is the revolver



for several reasons, their being little or no recoil easy trigger pull, and better grip. In continuous rapid fire, the automatic is way ahead of the revolver on account of being able to carry several loaded magazines. In one of our types of the best American automatic pistols, the rate of fire is still higher on account of the shooter's ability to drop out the empty magazine with the shooting hand.

The users of the automatic pistols will find by comparing them with double action revolvers of the same style, weight and length that in firing a thousand shots with each gun, he will have less trouble in the shape of misfires, etc., with the automatic than with the revolver. The accuracy in the revolver will begin to fall off very rapidly after about the first fifty shots, and if the shooter is using black powder, they will probably stop working completely in most cases after that number. In the automatic the continuous firing seems to have no effect on the operation of these arms. The automatic for police use has a very valuable feature in that it can be carried with perfect safety when fully loaded with the safety catch on, and if the officer in running should stumble or fall, he cannot pull the trigger as has often happened in such cases when using the double action revolver.

The range at which a policeman usually uses his pistol is from twenty to thirty feet, therefore it is essential that he have a weapon that can fire the greatest number of shots in the shortest possible time with the greatest amount of accuracy and least trouble to the shooter, and the automatic pistol is certainly the gun for this kind of work.

If the police of Philadelphia had an automatic pistol like the Savage, that is a natural pointer, there would not have been so many innocent people shot during their latest strike. As most police revolvers have such a heavy recoil that their makers are forced to put on them front sights of almost  $\frac{3}{4}$ -inch to  $\frac{1}{2}$  inch in height, which means that the revolver is really pointed at 20 yards between two and three feet below the target when the trigger is pulled. Now, if the revolver is not held the same way every time, it will be constantly changing in elevation, so can you imagine where the shots of a revolver are going when fired in a hurry and under excitement? This is one feature that is not apparent in the automatic as the front and rear sight are of the same height, on account of the slide recoil. When we take in consideration the small handles on revolvers, we can readily understand why so many policemen make such poor scores, as some of them have hands large enough to practically conceal the whole weapon in them.

## YOUNG MEN AND OLD ARMS

THE group of grotesquely armed young men shown in the cut, are natives of Pearl City, Ill., and so far as our observation goes, they are typical of the soldier material that will compose the rank and file of the American Volunteer Army in the event of a foreign invasion. Evidently there is considerable latent military enthusiasm in these young men, as they have at their own expense, possessed themselves of some excellent types of military rifles, now obsolete as war weapons, but still serviceable as hunting arms. Among the motley collection may be seen a Beaumont, a Stevens, a Maestrich .43 caliber, made in Holland; a Lee-Metford .45 caliber made in England; three .45-70 Springfield rifles of American make; a Sharp's .45 caliber also of domestic manufacture; a 7 mm. Mauser of German architecture; and a Winchester .22 caliber. There are several millions of young men of this type, healthy, active, intelligent, square jawed, and inspired with a genuine patriotism, who will be available when the next call for volunteers is made. It will be a permanent record of rank stupidity and incompetency on the part of our national law makers, if young men of this class are any longer compelled to resort to the bargain counter and second-hand store to purchase archaic weapons when they wish to indulge in a sport, the love of which is the natural heritage of every free-born and liberty loving American. In considering the possibilities of future wars, our self-appointed prophets tell us with pessimistic

relish, of the ease with which the "Japanese could sink our battleships, silence our coast defenses, sail unscathed through our mine fields, and capture and hold indefinitely, the entire Pacific slope." We are informed with a seriousness that is actually infectious, how "Germany could, within two weeks, land two hundred and fifty thousand troops on our Atlantic Coast." Our coasts are long and defenceless at many points, but if the viril youth of America like those shown in the cut, were armed with modern military rifles, and as familiar with their possibilities as they are with the relics they are now using, the Japanese Army of invasion would soon be converted into a disorganized mob of beach combers, and the German landing party into a coast survey from a distance. No country whose citizens are properly trained in the use of the long range military rifle, need have any fear of a foreign invasion. A powerful navy is, no doubt, an excellent preventative of war, but the example of Spain and Russia should teach us that it is not a good policy to put all our eggs in one basket. Our neighbors with hostile intent, would soon learn that there is a slight difference between shooting up a few sea coast towns, and over running a country having vast territory and a shooting population. Every able-bodied man should be encouraged to purchase the National arm and ammunition, and thoroughly instructed how to use them without being subjected to humiliating and irksome regulations. The great game fields,





AN INTERESTING GROUP

and the vast unsettled territory that were once the training grounds of America's riflemen, are rapidly being converted to the uses of civilization; we can no longer depend on the hardy backwoods hunter, the seasoned mountaineer and the resourceful plainsmen, trained in the use of shooting weapons from early infancy, to supply our army with fighting men. Except for a very small contingent, sharp shooters and scouts of future wars must be made on the rifle range, and trained in the over-worked summer camps of National Guardsmen. Only a pitifully small percentage of our citizens ever receive any military training in the National Guard, and only a small number receive sufficient practice with the rifle, to become efficient marksmen. Realizing this, we should insist that repre-

sentatives to whom we delegate the making of our laws, should so modify existing regulations that it would be possible for any citizen of good character properly vouched for, to secure by purchase, the national arm at the most convenient supply depot. The American people do not take kindly to the idea of a large standing army. In view of the military activity of other nations, and our change of policy in regard to international affairs, the wisdom of our position in regard to a permanent military organization not large enough to be aggressive, is open to debate. Why build dreadnoughts if we have no army to back them up? It is plain that we must eventually have an army, or its equivalent in a citizenship skilled in the use of war weapons.

## A MOUNTAINEER'S VIEWS

EDITOR GUN DEPARTMENT: It requires quite a bit of bravery to pick up a pen and give our ideas of what constitutes our ideal gun. The trouble is, we know (?) too much without seeing it worked out in practice and when our theories come before a person who does not know from experience why then we get our lecturing in good old American style. Truly, there are lots of gun men, but comparatively few know how to determine the advantages and disadvantages of our modern arms. Through the well written articles of such experienced men as Kane, Wheelen, Newton and Crossman, we have been wonderfully enlightened, but to watch the Outer's Book, one would be led to believe that these men's interest in rifle shooting died when warm weather comes on in the spring and is only revived about the time the wild goose starts south.

What we need is more lengthy articles on modern military rifles and sporting rifles, and the work these rifles do at targets and game field. The world's best rifles viewed lock, stock and barrel and criticised without fear or favor. A good many of us were astonished and somewhat offended at Mr. Crossman's bold attack on lever action rifles, but at the same time we could not help realizing the truthfulness of his statements. There is a growing demand in this country for a .22 caliber automatic pistol and a high grade well finished bolt action rifle for military cartridges. These must come sooner or later because Americans demand them. And may the day not be far distant when American armorers will aim to make not the most guns but the best guns. Yours,

MOUNTAINEER.



## THE NEW SMITH & WESSON PERFECTED

TO the hard-headed student of gun literature and to the blaze reader of fulsome and exaggerated advertising matter, the caption of this article will undoubtedly have a familiar sound; but if those who take the trouble to read this review of the New Smith & Wesson .22 Caliber revolver, recently issued, are sufficiently impressed to induce them to thoroughly examine the little arm they will agree with the writer that "Perfected" does not mean merely an added improvement; the exquisite beauty, the dainty proportions, the faultless workmanship, the beautiful smooth dark finish, and the classical outlines of this diminutive among American arms is justly deserving of the word "perfected" in its fullest significance. The specimen of the New .22 Smith & Wesson which the writer was privileged to inspect, is numbered 17005; it has a 6-inch barrel and is equipped with target sights. When supplied with a 3 or 3½-inch barrel, the sights are solid; with the 3-inch barrel the weight is 10½ ounces, with the 3½-inch barrel it weighs 10½ ounces, and with the 6-inch barrel it weighs 11½ ounces. Truly it is "The Baby Grand" of the pistol family. To the critical gun crank and to that practical matter of fact class of pistol shooters who base their judgment of every arm on its adaptability for certain lines of work, the little feather-weight gun may not at first appeal, but it is a safe wager that having once seen and shot this daintiest of all firearms, every gun lover, regardless of his former predilections, will at once place one of them in a favored corner of his gun cabinet. It must not be supposed that because the Smith & Wesson .22 caliber revolver is built on reduced lines and is of minimum weight, that it lacks anything as a genuine weapon, adapted to every purpose for which its caliber and cartridge were designed. It will shoot just as hard in proportion, and is just as accurate as the Smith & Wesson weapons of larger caliber and greater weight which have long been numbered among the chosen arms of the world's greatest experts.

In accordance with his usual custom, the writer dismantled and thoroughly inspected every detail of mechanism in the new arm and in comparison with a .44 Smith & Wesson Winan's Model Target revolver; a .38 Smith & Wesson Pocket Model, special finish; a .38 Smith & Wesson Military Target Model 1902, and a .22 Smith & Wesson Single Shot Target pistol, the new .22 caliber revolver was found to be fully up to their standard of material, workmanship, fitting and finish. The hammer, trigger, bolt, pawl and all the working parts and contact points are made of case hardened and polished steel, so that wear, in a mechanism of this character, is practically eliminated. A feature of construction peculiar to the larger arms of Smith & Wesson make, and also present in the new .22 revolver is the steel bosses or raised contact points of the frame which form bearings for the hardened steel axles of the hammer, trigger and other swinging parts, keeping them hung centrally, preventing rubbing against the sides of the frame and ensuring smooth, easy, direct working of the mechanism, without friction or wear. The system adopted for the arm is the swing-out, with hand ejector, which has proved to be the most popular and successful in hand arms of the revolver type. The cylinder is firmly attached to the crane so that it cannot become loose. The ejector rod is of hollow steel, seven-thirtyseconds of an inch in diameter and contains the strong steel spindle upon which the cylinder revolves. The cylinder, when swung into place, is supported by the rear end of the steel spindle, securely stepped into a hardened steel bushing and at the forward end by the crane; a front cylinder lock is brazed to the under side of the barrel just ahead of the frame; this engages the forward end of the hollow ejector rod and spindle, locking the cylinder securely at both ends, and the crane in closed position. By this method of locking, perfect alignment of cylinder and barrel is absolutely assured, all wear is taken up automatically and the rear thumb piece

is dispensed with, leaving the beautiful smooth surface of the frame without a projection of any kind to mar its natural beauty lines. The barrel tapers slightly, measuring seven-sixteenths of an inch outside diameter at the frame and showing a sixteenth less at its tiny muzzle. The union of barrel and frame is perfect and has been accomplished in accordance with a method which the entire history of high grade gun building has proved to be the correct one.



THE PERFECTED WITH SHORT BARREL.

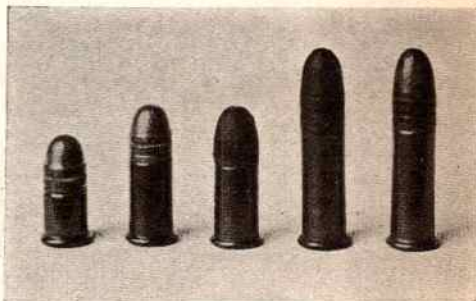




THE NEW SMITH &amp; WESSON WITH SIX-INCH BARREL

After the frame is carefully faced a shoulder is turned on the breech end of the barrel at right angles to the long axis of the bore; when the frame is drilled and threaded and the barrel screwed into place, the strain of the square shoulder on the barrel against the end of the frame compels perfect alignment of barrel and frame; to supplement this and prevent the barrel from working loose under the vibration of constant firing, the frame is drilled transversely after the barrel is stepped in place; a strong steel pin is then driven through the frame engaging the upper periphery of the barrel, which, with the solid frame, heavy thread and square shoulder secures the barrel permanently in a correct position and prevents any tendency toward rotation. The feature here described is peculiar to all Smith & Wesson revolvers of the solid frame swing-out type, and it has the unqualified endorsement of the United States ordnance who recently conducted exhaustive tests to determine the relative merits of pistols intended for military service. The cylinder is pierced for seven shots and the chambers are bored without a shoulder; this enables the marksman to use the various makes and lengths of .22 caliber cartridges which includes the short, long, long rifle, and the several makes of .22 ammunition designed for indoor or armory practice; the latter is but a modification of the excellent long rifle cartridge, with a heavier crimp, and slightly strengthened to meet service requirements. The .22 Smith & Wesson long is a cartridge of this class and is especially recommended for use in the new revolver. The absence of a shoulder in the chambering facilitates cleaning and to a great extent prevents an accumulation of fouling when compelled to use cartridges of different lengths. The mechanical expert and gun crank will at once note the method adopted for locking the cylinder, and bolting it in position for firing. When the cylinder is swung into place and locked, the front cylinder lock is actuated by the beveled edge of a case hardened steel nut with knurled rim which is screwed onto the hollow ejecting rod; as the crane and cylinder drop into position, the steel spindle is pushed to the rear into its bearing by pressure of the front safety lock spring and piston, at the same time the bolt engages the stop

notch in the cylinder holding it securely. By the action of the trigger the bolt is fitted directly from the lateral center of the frame near the rear of the cylinder and directly under its bearings so that there is no tendency to a side strain which might partially rotate the cylinder. A most desirable feature of the mechanical principle is that the cylinder is at all times locked firmly in firing position while the hammer is cocked, falling, or down, and the hammer automatically returns to safety when the finger is removed from the trigger. In sighting the target model .22 revolver, no pains were spared, "because it was such a little one." The front sight is a thin steel blade perfectly fitted and pinned snugly with a friction tight steel pin driven transversely through a neat slotted stud brazed to the barrel nearly flush with the muzzle; this system permits of an easy interchange. The rear sight has a spring base which is set in a groove in the frame flush with its surface and secured with a tiny screw. The sight itself is a thin bar of steel with a U notch, slotted into the spring base and arranged for the most delicate screw adjustment for windage and elevation. A beautifully modeled stock of walnut or rosewood is regularly furnished, but pearl stocks may be had on order. The wooden stocks conform closely in general outline to the square stocks supplied on the famous military model of 1905, but, of course, proportioned to the dimensions of the smaller arm. A neat little medallion of old gold colored metal, bearing



THE AMMUNITION



the heraldry of the Smith & Wesson Company, is set in the upper part of the stockplates on either side. The jet black finish of frame and barrel; the rich dark grain of polished rosewood stock and the golden monogram form a most pleasing and durable combination of color. Considered from a mechanical view point, the writer believes the arm just described, to be as near ideal, as human intelligence and skill at this time can make it. Considered from the view point of a practical gun user, he is of the opinion that the arm if made in a slightly heavier frame would cover a wider field of usefulness. During the agitation for a practical one hand gun to take .22 caliber ammunition, when considering the existing models as adapted to the purpose, among others we mentioned the single action, model 1891, Smith & Wesson, jointed frame, with automatic shell ejector, as especially desirable. While conceding the advantages of the solid frame for military or frontier work, and not unmindful of the fact that the claims made for the solid frame may also apply with equal force to target and pocket weapons, we still believe that the single action, jointed frame, with its lever purchase simultaneous automatic ejection, if made in .22 caliber, would become a prime favorite among those who recognize the essential qualities in a good gun. No amount of legitimate use will have any appreciable effect on the hinge or barrel catch. We recently examined a .44 caliber single shot Smith & Wesson revolver owned by a professional shot and used by him daily for several years; from this arm over 180,000 gallery and full charges had been fired and although, as might be expected, the hinge worked rather freely, there was no suspicion of looseness, side play or lost motion in any direction. The lock work also worked with an ease and smoothness which spoke eloquently of a correct mechanical principle, high grade material and faultless workmanship. Our long and satisfactory experience with the .22 caliber Smith & Wesson single shot pistol, and observation of its performance in the hands of others is the basis of our expressed partiality for the single action and heavier frame for the new .22 revolver. We are not alone in thinking that the inertia of a heavier arm, up to a logical limit, is an aid to close shooting although not absolutely indispensable. In this connection it is well to remember that not long ago the world's pistol record came near being "bumped" by a Diamond Model Stevens pistol, an arm weighing much less than the Smith & Wesson .22 Perfected revolver. There is no doubt but that the fairy

lightness and airy lines of the little arm will appeal to many who have not heretofore been attracted to firearms, and who are without fixed opinions and have nothing to unlearn. Many will purchase for the mere satisfaction of possessing a beautiful arm, who would not otherwise assume the care of a more cumbersome weapon. In size, weight and cartridge, it is singularly adapted for the use of ladies, as protracted practice at summer camp or cottage may be indulged in without undue fatigue. With the 6-inch barrel the total length is but 9½ inches, its greatest width is the diameter of the cylinder which is exactly 1 inch; the gun and its ammunition are so inconspicuous that they may be carried in a lady's hand bag or in the pockets of an outing costume without attracting attention. In the brief test at short range, that limited time permitted, we found the arm to possess surprising accuracy, and this too with a mixed lot of cartridges, black and smokeless, some of which had been loaded for several years. It is our intention to conduct a more exhaustive test of .22 caliber arms and ammunition with a view to determine which cartridge will give the best results in the new .22 caliber revolvers; preliminary work in this direction is responsible for the statement that however excellent our .22 caliber ammunition may be when used in rifles it leaves much to be desired when used in the shorter barreled arms. These defects will be remedied as the value of the small bore revolver as a protective arm and the pleasure and economy of its use becomes more widely known. The success already achieved in the direction of perfecting the automatic type of pistol in the heavier calibers and its undisputed adaptability for any service requiring man-stopping loads, may eventually bring radical changes in our one hand guns. It is safe to predict, however, that the new .22 caliber revolvers as now made, taking cheap and popular ammunition, will create a new generation of shooters, popularize pistol shooting and give revolvers in light and medium bores a new lease of life. The mechanical perfection of the revolver, as exemplified by the Smith & Wesson Perfected, its reliability in service, demonstrated accuracy, inexpensive load and exquisite beauty forms a combination of attractions that to the average American will be irresistible. It is our wish and, judging from the letters received, it is our firm belief that the manufacturers who have so promptly responded to the call for small bore revolvers, will meet with the measure of success to which, by reason of their progressive policy, they are fully entitled.

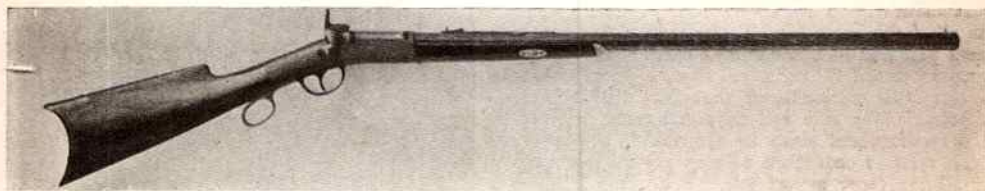




## THE PERRY RIFLE

THIS interesting and well made arm is unmistakably American in design and workmanship. The specimen shown in the cuts was loaned to the Outer's Book collection by a good friend, a gun lover who dug it up among the rubbish in the basement of an old building in which he was about to install a heating plant, in a southern Wisconsin city; evidently the old rifle had been stored away by some unappreciative domestic and its existence forgotten. The laterally pivoted swinging breech block bears the inscription "A. D. Perry's Patent," across the upper surface of the

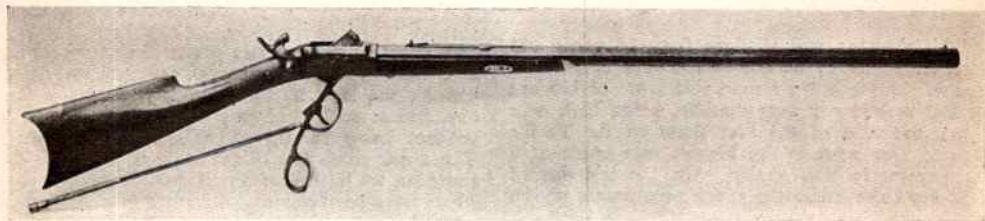
To load the arm, the actuating lever to which the breech block is permanently fastened is thrown downward leaving the breech block standing at an angle of about 45 degrees with the barrel. A paper cartridge may be then inserted in the forward end of the breech block or loose powder and ball may be used; the charge is ignited with an ordinary percussion cap. A unique feature of this rare old arm is, that when the breech block is in position for loading, the arm automatically caps itself. To accomplish this a brass tube is provided from which the caps are fed by a spiral



AN OLD PERRY RIFLE IN GOOD PRESERVATION

breech block and the words "Perry Patent Arms Company, Newark, N. J." stamped in neat block letters on the center and lengthwise of the breech block. No date is given, but Bannerman's catalogue, describing a carbine of the same make owned by him, gives the date of manufacture as 1855. The description further states that the Perry carbine is mentioned by Admiral Dolgren in his book "Boat Armament 1856," considered at that time an ideal weapon for landing parties." The breech mechanism is similar to the Burnside. The specimen in the writer's possession is num-

spring. When the breech block is in position for loading, the nipple is in direct line with the capping tube which is located in the butt stock. The rifle in general outline follows closely the graceful lines so characteristic of American arms as made by H. E. Leman, of Lancaster, Pa., Geo. Golcher, J. Henry & Son, for the pioneer and Indian trade. In the change from muzzle to breech loader, and again to multi-shot types, much of the characteristic beauty has been lost but even in our latest sporting models the connoisseur may still trace the refining influence of early American rifle makers



THE PERRY WITH THE ACTION OPEN

bered 606, although Bannerman's book states that "only 200 of these rifles were made." It also gives the caliber as .54, while the one shown in the cut is .40 caliber. The barrel is full octagon measuring one inch in diameter and like most of the weapons of the past generation is of uniform thickness to give muzzle weight and steadiness in holding. It is something of a surprise to turn from a modern .25-36 barrel with its 9-inch twist to the Perry with a 60-inch twist and grooves fully twice the depth and slightly more than twice the width of the modern arm.

on modern gun architecture. The lock is located inside of the grip opening on the left side and is a simple well made piece of mechanism, every part of which is well fitted and finely finished. The stock and forend are of solid, polished mahogany ornamented and tipped with German silver, all the metal parts except the breech block which is a steel blue are finished in a rich warm brown which was so much in favor on sporting arms nearly a century ago. In fitting and finish this rare old rifle, made nearly 60 years ago, will not suffer by comparison with the best work of modern armorers.



## MRS. TOPPERWEIN'S WORK

EVERY person who is capable of appreciating the "people who do things" that require skill, fortitude and physical endurance, must feel a thrill of admiration for wonderful little Mrs. Topperwein, the unchallenged Shooting Queen of America. Since starting on their present shooting tour the Topperweins have traveled thousands of miles and have shot daily, giving their marvelous exhibitions with shotgun, rifle and pistol. In all of this work Mrs. Topperwein took a prominent part and in addition shot through the regular programmes of the registered shotgun tournaments. When it is remembered that Mrs. Topperwein shoots side by side and on equal terms with the best professional shots in the world, and under such weather conditions as may prevail, her work is all the more remarkable. Below are some of the scores made by her during their present tour through the Northwest:

|                              | SHOT AT | BROKE |
|------------------------------|---------|-------|
| Fargo, N. D.....             | 100     | 96    |
| Helena, Mont.....            | 100     | 99    |
| Anaconda, Mont.....          | 100     | 99    |
| Butte, Mont.....             | 100     | 99    |
| Spokane, Wash.....           | 100     | 98    |
| Walla Walla, Wash.....       | 150     | 149—  |
| 127 straight (ground record) |         |       |
| Boise, Idaho.....            | 100     | 96    |
| Nampa, Idaho.....            | 100     | 97    |
| North Yakima.....            | 100     | 97    |
| Seattle, Wash.....           | 200     | 195—  |
| including 20 doubles.        |         |       |
| Seattle, Wash.....           | 100     | 100   |
| Tacoma, Wash.....            | 200     | 191   |
| Aberdeen, Wash.....          | 100     | 97    |

This shooting was all done from 16 yards and includes scores of 96 out of 100 and better. At Seattle she made the remarkable score of 195 out of 200 including twenty doubles, being high over the entire field of the best shots on the Pacific Coast. Her score is the highest ever made at a tournament in that section. On the last day of this shoot she broke the entire programme of 100 singles from sixteen yards over five sets of traps, straight. She also made the two longest runs of the tournament, 106 out of 107 straight. She also had high professional average over all on sixteen-yard targets. Mrs. Topperwein has been shooting in wonderful form all this season and the above scores are only a few of good ones. She has broken 100 straight and over twelve different times since February 15th.

Mrs. Topperwein shoots a 12-gauge Winchester pump gun, trap grade. Her regular load is 3½ drams of Dead Shot powder and 1½ ounces of No. 7½ chilled shot in a Winchester leader shell; this load has a recoil of about 28 foot pounds. The accompanying photograph shows Mrs. Topperwein in characteristic shooting position. Veteran



MRS. TOPPERWEIN'S SHOOTING POSITION

trap shooters will at once notice that her position is correct. Standing squarely over the center of gravity, she is at all time perfectly placid, so that aim and a quick shot may be taken at any angle without being thrown off balance by the recoil. The upper comb line of the stock is level with the shoulder, the butt plate is well inside of the shoulder joint, bringing the side of the stock in close contact with the shooter's face where it is held in place snugly by counter pressure from a well muscled shoulder and fore arm. The left arm is extended in an easy graceful and wholly natural position, slightly flexed, the hand grasping the sliding fore-end at a point which ensures perfect control and the utmost speed of manipulation. It will be noticed that in shooting Mrs. Topperwein's figure is inclined forward at an almost imperceptible angle; this serves to absorb the heavy recoil of modern trap loads without undue muscular strain. The writer regards Mrs. Topperwein's shooting position and shooting methods as being technically and scientifically correct. It is only by the most faultless methods that such work as Mrs. Topperwein is doing every day may be accomplished.



# SELF-LOADING ARMS

## PART II

By L. A. DANSE

### THE COLT PISTOLS—Continued

#### .380 POCKET MODEL HAMMERLESS

This model, while it shows some similarity to the .45 Military model, is different in enough essentials to merit a description of parts and action. It may, like the .45, be divided into four parts: frame, barrel, slide, and magazine.

The frame has, at its rear upper extremity, a box-like projection extending back from top of grip, which houses the hammer. Along the top of frame are ways, which engage corresponding ways in bottom of slide and along which the slide works. Forward of the hammer, the ejector is fastened in top of frame. Through the ejector is a hole in which the upper end of action safety projects, said action safety extending downwards, swinging on sear screw and establishing connection between trigger and sear. The sear being swung on same screw as action safety, embraces safety and holds or releases hammer according to position of trigger which is set in a slot in rear of trigger guard. Trigger guard is just forward and above grip. The trigger has a sort of stirrup shaped rear end which projects back around magazine well to bottom of sear and safety which rest against the bar of stirrup.

Above trigger guard is a forward projection of frame which contains a well for retractor spring and follower; a groove in which the spring seat of slide works and a seat for the barrel, which is grooved to engage corresponding grooves in barrel, locking barrel to frame.

On left side of frame near the top is the slide lock which acts as a safety by locking the sear and slide, and can also be set to hold the slide back, leaving action open. The hinge pin of this slide lock acts as pivot for the hammer and also holds the rear end of the ejector in the frame. The rear of the grip is cut out, forming a slot in which lies the grip safety, its lower end hinged on a pin through grip and its upper end setting over the two rearward projecting lugs of the sear in such manner as to block the sear when the safety is allowed to spring back and to release sear when safety is pressed into grip. The main spring sets just forward of grip safety, in grip, exerting its pressure on the hammer at its upper end and on the grip safety at lower end. In front of main spring is the sear, action safety and magazine catch spring. The magazine catch projects from bottom of grip at the rear of magazine well and serves to hold the magazine in place in the grip. The stocks are held in place on grip by a small screw which passes through grip from one stock to the other. The upper forward surface of the magazine well is beveled to form a ramp to guide cartridges from magazine into chamber.

The barrel is held and guided at front end by the barrel lock which engages in the front end of slide. The rear end of the barrel has, on the bottom, transverse lugs and grooves which engage

similar lugs and grooves in top of frame, locking barrel to frame. The cartridge chamber in rear end of barrel is beveled downwards at back, to form a ramp to guide bullets of cartridges from magazine into chamber.

The slide is integral with the breech block and receiver. It has at its rear end a housing for the enclosed hammer. On its top are set the sights, the front one riveted in place and the rear one in a dovetailed cross slot. On the sides, near the rear end, are gasping knurls to give a firm grip to retract slide. In the right side, about the center, is the port through which the empty shells are ejected from the gun. Back of this port is set the extractor in a slot in slide. On the front of the slide is formed a lug which extends downwards and in which is a seat for the retractor spring. In the front of this spring seat, the plug is pinned, which takes the pressure of retractor spring and also holds the barrel lock in place. On the inside of the slide is a sort of hole or groove for the barrel to set in. At the forward end this hole has a notch cut in it and a nest for the barrel lock. Near the middle of the top of this barrel groove is a cross slot which, when the slide is drawn back, allows the barrel locking lugs and grooves to be rotated, unlocking the barrel from frame. The breech block, which is formed in the slide has through it a hole in which are the firing pins and spring. In bottom of breech block is a notch for the action safety piece. Along the bottom of slide are the ways which allow the slide a fore and aft motion on frame. In the bottom of left side of slide are cut two notches for the slide lock; one allowing the locking of slide and action when closed and the other to hold slide open.

The magazine case is tubular, having its lower end closed by the bottom piece which is pinned in. The sides of the upper end are turned in so as to hold the cartridges from escaping straight up but allowing the top one to slide forward. In the side of magazine are holes through which can be seen the number of cartridges contained. Inside the case is the spring and on top of it the follower. The bottom piece of magazine is extended forward to aid in its withdrawal from grip.

To prepare for firing the magazine is charged, inserted in the grip, the slide lock safety pushed down and either one opening movement of slide made by hand, or a cartridge inserted in the chamber by hand, before magazine is fully seated. If the former is done, the magazine may be removed and another shell inserted, making 8 shots ready. The grip being firmly grasped, releases the grip safety and allows movement of sear. Aim is taken and the trigger pulled, pressing back on bottom of sear and swinging nose of sear out of engagement in notch of hammer, which was left at full cock by the first opening movement of slide. The sear, releasing hammer, allows hammer to fall under main spring pressure and strike the firing pin, which, in its turn, detonates the primer and



discharges the cartridge. The pressure of the powder gases act forward, expelling the bullet, and also rearward against the base of shell and breech block, which is held in place by the retractor spring. The rearward pressure overcomes the inertia of rest of the breech block and slide and the forward pressure of retractor spring and main-spring (through hammer), starting slide backwards on frame. The slide moving back carries with it the empty shell in the grasp of the extractor and forces the hammer back and down. As the

slide starts back, it depresses the action safety which removes the connection between trigger and sear and allows sear spring to press sear nose back against hammer. As the slide nears the rear limit of its travel, the ejector throws the empty shell out of the port in right side of receiver and the breech block forces the hammer to full cock where the sear nose engages the notch and holds it. The breech block also passes behind the uppermost cartridge in magazine and allows it to rise slightly



HALF SIZE.

FIG. 10—.380 POCKET MODEL HAMMERLESS

Length of barrel, 3½ inches; length of pistol over all, 6½ inches; weight of pistol, 23 ounces; capacity magazine, 7 shells, with one in chamber, 8 shots; weight of bullet, 95 grains. Initial velocity, 865 foot seconds; energy, 158 foot pounds; penetration, four and one-half inch pine boards. Type action, recoil operated with spring held breech, enclosed hammer, side ejection. Type magazine, single column, inserted, detachable, box. Sights, front, fixed barleycorn; rear, dovetailed U-notch. Safety, slide lock (holds slide and sear); grip (automatic, blocks sear and indicates if hammer is cocked). Finish, blued. Stocks, hard rubber. Price, \$17.50.

under pressure of magazine spring. The backward motion of slide being checked, it starts forward under pressure of retractor spring, the breech block pushing the topmost cartridge from the magazine into the chamber. As the retractor spring forces the slide home, seating the cartridge in chamber, the breech block, arriving in its forward closed position, allows the action safety to rise into its notch and re-establish connection between trigger and sear as soon as trigger is re-

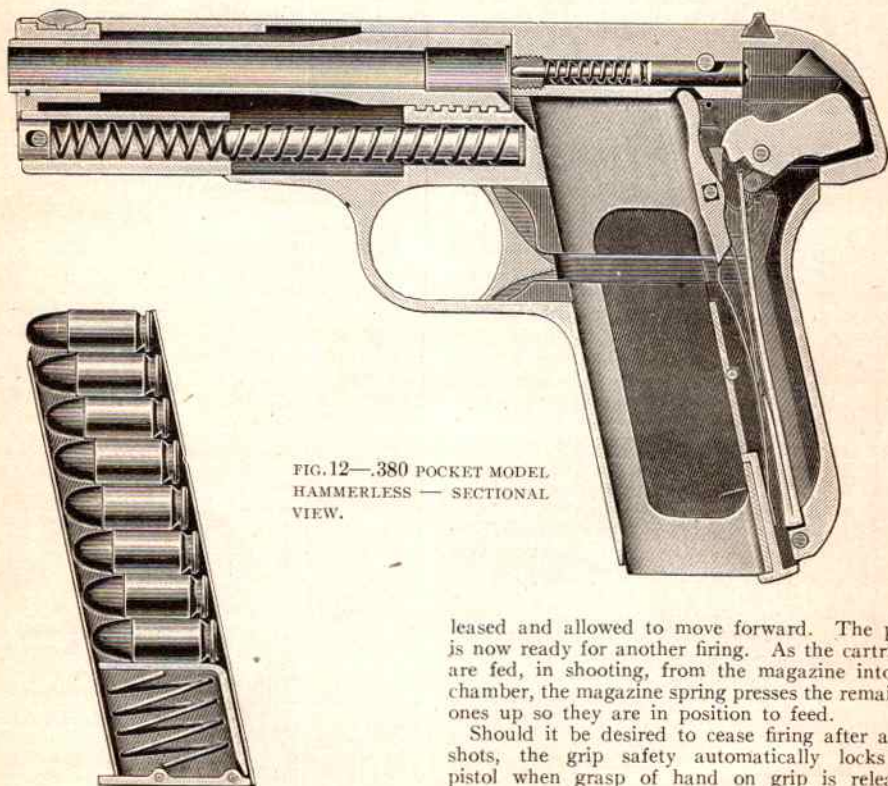


FIG. 12—.380 POCKET MODEL HAMMERLESS — SECTIONAL VIEW.

leased and allowed to move forward. The pistol is now ready for another firing. As the cartridges are fed, in shooting, from the magazine into the chamber, the magazine spring presses the remaining ones up so they are in position to feed.

Should it be desired to cease firing after a few shots, the grip safety automatically locks the pistol when grasp of hand on grip is released.





FIG. 14—.25 POCKET MODEL HAMMERLESS

Length of barrel, 2 inches; length of pistol over all, 4½ inches; weight of pistol, 13 ounces; capacity of magazine, 6 shells, with one in chamber, 7 shots; weight of bullet, 50 grains. Initial velocity, 675 foot seconds; energy, 42 foot pounds; penetration four ¼-inch pine boards. Type action, recoil operated with spring held breech, enclosed striker, side ejection. Type of magazine, single column, inserted, detachable, box. Safety, slide lock (holds slide and sear); grip (blocks sear). Sights, machined in top of slide; front, square bar; rear, U-notch. Finish, blued; case hardened trigger, slide lock safety and grip safety. Stocks, hard rubber. Price, \$12.00.



FIG. 16—.25 POCKET MODEL HAMMERLESS TAKEN APART

and sear securely. To take the arm down, the magazine is withdrawn and chamber unloaded. The slide is drawn back until the small arrow-head and line, on right side of slide near front, are even with front of frame. The barrel is then turned to the left as far as possible, the slide released and drawn forward off the frame with barrel in it. The retractor spring and follower are now free. To remove barrel from slide, the barrel lock is given a half turn and drawn forward. The barrel can then be removed from slide.

To dismount action the stocks are taken off, when the various screws and pins may be taken

is allows the arm to be carried loaded and cocked in perfect safety. If it is also desired to further lock the arm, the slide lock safety is pushed up and it engages the notch in slide and locks slide

out and action parts removed. To assemble barrel and slide, the barrel is inserted in slide with the locking ribs down and the barrel lock inserted and given a quarter turn,



locking it. The barrel is given a half turn so the locking ribs are in the recess in top of slide. The retractor spring and follower are placed in frame and the slide with barrel, fitted to its ways in frame and pressed back (the retractor spring being inserted in its seat in slide) until the arrowhead and line are at the front end of frame. The barrel is then turned as far to the right as possible, locking it to frame and the slide is released and allowed to move forward. The barrel lock should be so turned to place, that the plug in retractor spring seat of slide engages the notch prepared for it in bottom of barrel lock.

### .32 POCKET MODEL, HAMMERLESS

Length of barrel, 3½ inches; length of pistol over all, 6½ inches; weight of pistol, 23 ounces; capacity of magazine, 8 shells, with one in chamber, 9 shots; weight of bullet, 71 grains. Initial velocity, 1010 foot seconds; energy, 161 foot pounds; penetration, six ¼-inch pine boards. Type action, recoil operated with spring held breech, enclosed hammer, side ejection. Type magazine, single column, inserted, detachable box. Safety, slide lock (holding slide and sear); grip, (automatic, blocks sear and indicates whether hammer is cocked). Sights, front, fixed barleycorn; rear dovetailed, U-notch. Finish, blued. Stocks, hard rubber. Price, \$15.00.

This gun is built and manipulated the same as the .380, the only difference being in caliber and number of shots.

### .25 POCKET MODEL, HAMMERLESS

The .25 pistol is a radical departure from the other Colt models as far as the lock and firing mechanism is concerned. It has a spiral main spring and a striker working in the breech block somewhat similar to our bolt action rifles. The sear and trigger mechanism are different from the other models, but slide, barrel, magazine and frame have the same appearance.

The frame has the magazine well with its catch in grip,—trigger guard ahead of grip, safety in back of grip, ways for slide along its top and retractor spring seat in front end. The stocks are fastened in a manner similar to the .380 and .32 Pocket model. The rearward projecting hump above grip has, instead of the hammer of the .380 and .32, the slide lock safety which blocks the sear when turned up and allows sear motion when down, and a small lug which sticks up at the rear of hump, forming a buttress for the main spring. The trigger which, instead of sliding in guard, is swung on a pin, transmits its motion through a connector to the sear, which is hung just behind the magazine well, in top of frame. This connector also acts as an action safety. When the slide and breech block are fully forward, the connector transmits trigger motion to sear, but when the slide is not home the breech block depresses the connector removing its contact with sear. The grip safety, which is automatic, blocks the sear when it is allowed to spring out. When it is pressed into the grip, it allows the sear to swing and release striker. The frame has cross lugs and grooves to lock the barrel, like the .380 and .32.

The slide, which is integral with the breech block, has its ways to work along the frame. Projecting down from its front end is a lug against which the retractor spring exerts pressure forward and

through which is a hole for the retractor spring guide. The sights are machined in the solid metal of the top of slide. In right side of slide is the port for ejection of fired shells and behind it is hung the extractor. The sides of slide are knurled to allow a firm grip to be taken when drawing back the slide. The rear end of slide which forms the breech block, has through it a hole in which fits the striker, main spring and follower. On the bottom of striker is a lug which acts as a cock notch, engaging the sear nose.

The slide is machined out, to receive the barrel in the front end. There are recesses prepared for the locking lugs on bottom of barrel, in the right side of slide, to allow barrel to be turned in dismounting.

The barrel has, like the .380 and .32, lugs cut across the bottom of its rear end to lock it to frame. The bottom of chamber is slightly beveled to guide cartridges into chamber.

The magazine is made up in a similar manner to the .380 and .32 but is, of course, smaller.

The magazine and chamber being charged and striker cocked; to fire, the slide lock safety is pushed down, grip safety pressed in and trigger pulled. The trigger pushes the connector back, which in its turn swings the sear allowing the striker to fall and detonate the primer.

The powder gases act forward, expelling bullet and rearward, forcing slide back against pressure of main spring and retractor spring. The slide moving back, carries with it the discharged shell in the grasp of extractor and near the end of its rearward travel ejects shell through port in slide. The breech block passes behind the topmost cartridge in magazine and also carries the striker back so the sear holds it. The force of recoil being spent and slide having reached its limit of rearward travel, the retractor spring starts it forward pushing the upper cartridge into chamber. When slide is forward and trigger released so as to re-establish contact between connector and sear, the pistol is ready for another shot.

To take the pistol down, the magazine is removed, chamber unloaded and striker released. The slide is drawn back until its front end is within one-sixteenth inch of front end of frame. The barrel is given a quarter turn to right and slide and barrel drawn forward, off the frame. This frees the main spring, follower and striker and also the retractor spring and guide. The barrel may then be given a quarter turn to left and dropped out of slide rearwards.

To put pistol together again, the striker, magazine and follower are placed in slide and retractor spring and guide placed in frame. The barrel is inserted in slide and turned to left on a quarter turn. The slide is placed on frame and drawn back (taking care that main spring and follower are correctly seated and that retractor spring and guide fit socket in front of slide) until slide is one-sixteenth inch from frame. The barrel is then given a quarter turn to left and the slide allowed to go forward to place.

[TO BE CONTINUED]

See page 403



# THE NIGGER IN THE WOODPILE

By CHAS. ASKINS

"The Good Ship sailed, all cargo laden,  
With Ross barking sharp o'er the lea,  
But the captain sighed, as the breeze shrill  
whistled,  
For the Mauser that never returned,  
The Mauser that never returned."

I note that some of the peroxide that shone in golden glory round the Ross is wearing off, too. The Ross no longer dismounts with any celerity (strictly English word and ought to be good) and sixteen odd pages of good stuff have all been worse than wasted. In fact, seeing that the Ross is without this important feature of ease in dismounting, it is now up to Mr. Crossman to prove that such mechanism is not of mighty importance after all.

Mr. Crossman's predicament reminds me of the Dutchman who killed his dog to prevent it from starving to death, and took the hide to a tannery to sell. Now be it known the hide of a poor dog makes excellent leather while that of a fat one is rotten and worthless. Knowing the Dutchman was unaware of this, the tanner sprung a joke on him.

"Mr. Altreuter," he said, "so many people bring poor dog hides in here, are you sure that dog was fat?"

"Yaw, Chon, dot vos sure a fet tog."

"You couldn't be mistaken about this? It makes a big difference in the price of the skin."

"Chon, dot tog vos yis so fat he couldn't walk on his leks no more un I hed to keel him."

"I am sorry for that, Mr. Altreuter. The hide of a fat dog is rotten; it isn't worth ten cents, but if it had been a poor dog I should have given you two dollars for the skin."

"Vot!!! Heilig tunder, vos sachen sie! Vell, now, Mr. Chon, maybe dot tog vusn't so tam fet after all."

The excuse Sir Edward makes for constructing an arm that can only be dismounted with difficulty, a plea that the average man hasn't brains enough to handle a really up-to-date rifle, did not originate with him. Our army board gave precisely the same reason for keeping Uncle Sam's soldiers pounding away with the old Springfield .45 years after it should have been discarded. Our soldiers belied the army board, but perhaps the man who purchased a bolt-action rifle for sporting purposes would need to have his brain guarded with special care.

There were a few things that I wished to know about the Ross rifle, or rather to make my position more clear, I am not really interested in the rifle, but only in the cartridge and its performance in a comparatively light arm. For the Ross or any other bolt-action rifle I couldn't be induced to use one in hunting. I do not wish to be misunderstood, for I consider the Ross a good gun, perhaps the finest military rifle made, as some claim. Nevertheless, the bolt-action rifles have had their day; they were never more than a European makeshift as a sporting weapon; no

other war will ever be fought with them; and the soldiers of the world are practically on the last hike to the junk heap with them now. No student of military matters can avoid seeing that auto-loading arms are about here, and five years should see the end of all bolt actions, including the celebrated Ross—celebrated by Mr. Crossman.

For American sportsmen, they can be expected to lead the way, as they always have. There is no horse sense in a man pulling, pushing, and twisting at a bolt, losing in doing so his very best, or possibly, only opportunity to shoot again. When necessary for a rifle to repeat, it should do so instantly, without throwing the hunter into a panic by the need of going through a lot of complex movements at the exact time when he should be shooting, and shooting straight. Hence, as stated, I am only interested in the Ross rifle as being the means of developing cartridges which may be used in less antiquated arms.

I should hardly like to be placed in the position of not fully appreciating flat trajectory in a hunting arm. Were such the case, I should not be wasting time with this discussion. What I fear is that flat trajectory may be secured at too great a cost. We understand that Mr. Ross claims for his rifle that it shoots without metallic fouling, that it is more accurate than any other rifle, that while giving no greater breech pressure than the Springfield, it has a smaller bore and much higher velocity; either or all of which ought to add to fouling, breech pressure, and wear and tear, unless there is some mysterious process used in the rifling and construction of these arms that has not been explained.

Flat trajectory and the power that goes with it may cost too much in other ways. Army experiments with the old Springfield .45 showed that in order to get the most accurate work from that arm the barrel alone must weigh not less than thirty pounds. With a light weight of barrel the recoil was bound to affect the accuracy. Now what I am trying to get at is whether this principle affects the Ross as well or is there some other mysterious secret that negatives it—perhaps the Ross has such high velocity that the bullet gets out of the muzzle before the piece can jump. The history of other light arms, heavily charged, is that they must be held just so in order to shoot where sighted. A loosening of butt to shoulder, a tightening of the grip of the hands, the shooting with a sling or without it, will all vary the placing of the bullet upon the target. Mr. Crossman unexpectedly admits that the Ross is not without frailties of this kind when he tells us that it shoots four inches lower from the prone position. Now in my opinion should he test this rifle from a muzzle rest he will find the bullets striking at least twelve inches high; shooting from the knee they will land at a different point; shooting with back resting against a tree will vary them again; a different point of aim being requisite with every change in position or manner of holding the rifle.



These premises being correct we will say that the Ross rifle is accurate enough to shoot ten shots into a six-inch circle at two hundred yards, and that it has a four-inch trajectory. With some of the shots that go into the six-inch you are not going to receive value for the four-inch trajectory because the shots will go either higher or lower than the four-inch — the gun not having a practical accuracy equal to its trajectory. Then firing some of the shots from the prone position would enlarge the circle four inches, and you have a weapon that requires a ten inch circle to contain the shots. Moreover, should other shots be fired from different positions the circle that is to contain them will be enlarged to probably twenty inches.

Where is the value of a four-inch trajectory when some of the shots will go ten inches high and others ten inches low, the trouble being primarily due to over charging the rifle in an endeavor to flatten the trajectory. Perhaps I am wrong about all this, but prove it, and don't do it from a manufacturer's catalogue.

I note Mr. Crossman's advice to buy English catalogues and gun books. Considering this advice honest and well meant, I procured some of the books. The first was supposed to treat of modern English gun and rifle manufacturing. I found that the book mentioned one particular make of arms three thousand and seven times, and the most any other gun was named was three times. It was an advertising fake pure and simple, of such a nature that if perpetrated by an American author would probably lead to his being prosecuted by the United States Government for obtaining money under false pretenses. It cost me two dollars and Mr. Crossman can square the matter by sending me that amount through Outer's Book if he likes.

Here is an extract from one of the catalogues: It has reference to .20 and .28 double guns, rifled at the muzzle so as to shoot either shot or bullets. Extract: "On the continent of Europe, in India, and Africa, these weapons are adopted by the leading sportsmen for the combined purpose of hunting feathered and four-footed animals. They shoot shot and give reliable patterns, *equal to a perfect wing game gun*, and they perform with a bullet as well as the average big game rifle (like the Ross) in accuracy, but with superior power and effectiveness. This special combined gun is practically unknown in the United States and Canada, but is well worth the consideration of American and Canadian sportsmen as being eminently suited to the conditions of their sport. Why carry a cumbersome repeating rifle of inferior power (like the bolt-action rifles) when any class of sport you can possibly meet with can best be carried on with a handy, well balanced, and light shotgun, weighing no more than six pounds, and capable of inflicting a most deadly effect with the bullet on all four-footed game, including the dangerous kind, and at the same time shooting shot patterns, consistent and well distributed, *equal to the best bored quail gun it is possible to produce.*"

Now if Mr. Crossman would only spring something like that on us in place of fooling away time with an old time bolt gun there might be something in it. Of course, he could again take

the statements of the manufacturer as literal truth; though as a matter of fact the gun described above is merely a makeshift rifle, and good authorities have it that it patterns a trifle poorer than an ordinary cylinder bore, or say about thirty per cent. This thirty per cent we are gravely told is as good as the best quail gun it is possible to produce.

Here is a quotation from another catalogue: "Up to twenty-five yards the new 20 bore gives superior killing pattern to the full charged 12 bore and is equal to it at thirty-five yards and more." Further on—"The 12 gauge New Model Express shotgun, for high flying, wild duck, wood pidgeon, and all wild flying game, by a new system of boring gives results far superior to any other. Owing to the system of boring and chambering adopted, *it shoots without the discomfort of jar or recoil.*"

In fairness it should be stated that neither the book mentioned above nor the catalogues are intended for British readers, it being considered that the Americans have superior swallowing capacity even if they are not equal to the Briton in other respects.

If Mr. Crossman got his gun ideas from the source he would send me to, his peculiar notions upon guns, rifles, telescopes, and public gullibility are readily explained.

The Englishman has a little different style of advertising for home consumption. Here it is: "W. R. Green Company, Limited, Gunmakers by special appointment to HIS MAJESTY THE KING, to H. R. H. THE PRINCE OF WALES, to Lieut. The Right Honorable C. W. Townsend, V. C.; F. R. S. B. Z. to Edward Crossman, G. A. F. U. S. A. U. S. A. We are in daily expectation of a large order from the Right Reverend St. Peter, K. G. Bart. It having been conclusively proven by a recent test that our arms are infinitely superior to anything they have over there."

Neither American manufacturers nor the American public takes kindly to the flowry, superlative style of describing guns, and among foreigners it is only the Englishman who can never learn this. When we find a man, therefore, who can perceive a wonderful superiority in foreign products and nothing good in the home out-put, we are fairly entitled to suspect that in some way an English gooseberry has become engrafted upon a California lemon with bad results.

I cannot forbear a word for our American gun-builders. We have been called a nation of marksmen, and if so the credit is not to be given to our government, but to our gun manufacturers who have adapted their standard arms to the purse and needs of the average citizen who cannot in the nature of things be a rich man. In this country ninety-nine men in the hundred shoot for sport or recreation and the one does not; in Europe the one man of means and leisure is a gentleman sportsman and the ninety-nine dare not carry a gun. Should the time ever come, as perhaps it must, when only the one American in a hundred or a thousand would shoot a rifle, then our gun factories will be found turning out *best guns only*. Let the American gun maker be goaded by caustic criticism into embellishing and ornamenting his rifle, increasing the cost of a standard arm from twenty dollars to from one to three hundred and a



great percentage of the ninety-nine would shoot no more forever. At present the man of limited means in this country can feel that he is a man among men; that the standard rifle he shoots is equal in every essential to the best that any man can own anywhere in the world. The United States Government could well afford to pay a subsidy to the great rifle factories of America for doing the work that it has failed to do.

Probably in utterly condemning American arms, guns, rifles, sights, telescopes, and general American products, Mr. Crossman expects to find people who will not agree with him. Perhaps the majority will agree with me that he is merely riding hard on a harmless hobby, but he should not take offense if some few suspect that there is a nigger in the wood pile.

This reminds me of a little Texas story that I heard lately. It was told by an old darky.

"Yo' see," he said, "dah wus an ole he pole cat done take up his roos right in ma wood pile. One night he gits one o my chickens, en one night he katches one ob ole Mr. Sam's up de lane. He brings em all to dat wood pile en da's fedders 'nuf round to look mighty spicious. One night I hears him git a chicken en we has a turrible rumtious time fur a while, but dat ole he cat leads straight fur me, an I done broke away en call it a draw. De nex day ole Mr. Sam come along pas de house. I goes out to say howdy, but he say: 'H'm, hah, same fedders, h'm, hah, same scent; Jack, you dam ole black scound'el, I beleeb's I smell a nigger in de wood pile!'

"Huh!" I tole him, "ef yu' don' smell anyting wusn a nigger in dat wood pile, Major Sam, what de hell done happen to yoah nose."

## AN OLD-TIME MULTI-SHOTGUN

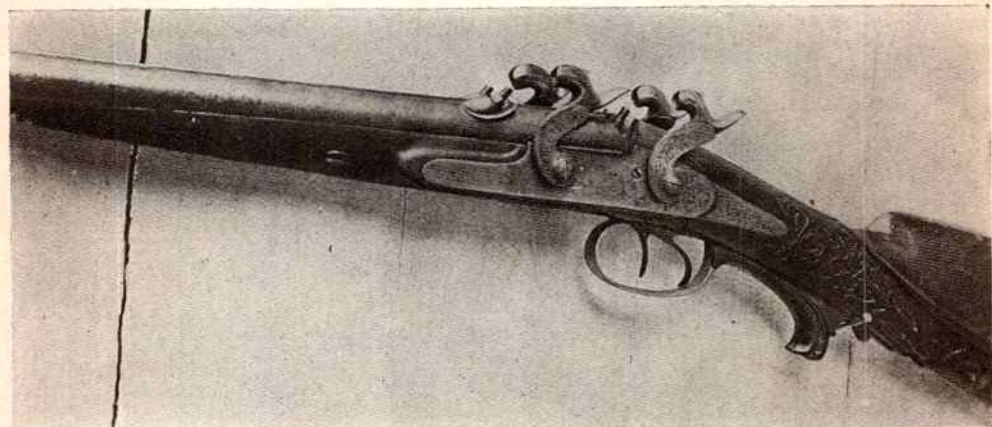
By C. L. GILMAN

WITH the automatic shotgun crowding the pump from the arena where it has been battling with the double-barrel over the two points of ethics and efficiency it's interesting to know that the effort to produce a shotgun which will place more than two shots at the command of the shooter is far from new.

R. C. Hoffman, of Minneapolis, has just rescued and refitted an early attempt to place four loads in one gun. Incidentally it gives an interesting side-light on the antiquity of the single-trigger

a stiff wad should fill this smaller chamber and the second charge be rammed down on top of it. The top wad, shot and main wad of the first charge would serve to prevent the premature ignition of the inner charge of powder.

In its lock work this gun is most ingenious. The forward and rear triggers govern the right and left barrels respectively. Each trigger acts upon the forward hammer first and the mechanism is so geared up it is impossible for the rear hammer to fall until the forward charge has been exploded



idea. As he obtained it, the four shot muzzle-loader was a battered wreck. Being an expert gun-smith, he has restored it to its original efficiency but unfortunately the date and the maker's name on the top rib are irretrievably effaced. Only a fragment of the word "Liege" remains to show that it was made in Belgium.

On each of its two barrels are two nipples for percussion caps. It is a 14 gauge but the chamber back of the forward nipple is smaller and has a distinct shoulder. Obviously it is intended that

by the falling of the hammer. It is possible to bring this gun into action with all four hammers cocked—in the picture the hammers on the left are set while those at the right are on safety—and rip out all four charges in lightning succession without "remembering" anything save that it's no use to pull the same trigger more than twice.

Though this gun has been refitted, even to chasing its new hammers to match the lock plate, none of the local shooters have been willing to give it a tryout. They plead that they aren't old enough





E. C. CROSSMAN, THE NOTED LOS ANGELES RIFLEMAN, TESTING A .35 CALIBER STANDARD RIFLE.



MRS. CROSSMAN, WHO IS ALSO A RIFLE EXPERT, SHOOTING THE SAME RIFLE AT 500 YARDS



MR. AND MRS. CROSSMAN DISCUSSING THE MERITS OF THE .35 STANDARD



# ANSWERS TO CORRESPONDENTS

## THE SET TRIGGER

EDITOR GUN DEPARTMENT: In your opinion, is a set trigger a desirable feature on a .22 caliber single shot rifle? On the rifle in question the single set trigger is the only one that can be furnished. Do they unnecessarily complicate the lock and are they durable? I will thank you very much for information on these points. Yours very truly,  
HOWARD J. SPORE.

[If your .22 caliber single shot rifle is intended for exclusive target use, for light hunting with a telescope sight, for rest shooting or indoor gallery work, a good set trigger would be a distinctive aid to close shooting. There are few really good single set triggers on the market and even the best of them may be vastly improved by any one who is deft in the art of tempering, and the use of tools. The double set trigger is in every way superior to the single as it is susceptible of much finer adjustment. I would not consider a set trigger of either pattern, an unnecessary complication on a rifle intended for the service as outlined above. I should not, however, recommend their use on hunting rifles intended for heavy or dangerous game. There is always an element of danger to one's self or companions while using a set lock under hunting conditions without corresponding advantages. I believe the only real advantage of the set trigger on a hunting arm would be while taking long distance shots at standing game, and even then the seeming advantage is debatable. After many years of experience with every class of gun users, I have come to the conclusion that the habitual use of the set trigger on arms with very light trigger pull has a tendency to make the shooter flinch from the explosion or as it is expressed in the vernacular of the craft "gunshy." My own best work was done with a plain trigger with a pull of eleven pounds, this included off-hand, short and long range work with a heavy military rifle. For .22 caliber rifle practice I prefer a trigger pull of about three pounds and a plain trigger. A trigger pull of from three to four pounds may be used successfully on any fire arm intended for all around work. If your shooting is to be limited to target or gallery work the set trigger will undoubtedly improve your scores. The double and single set triggers made by reputable American makers are simple, durable, and reliable and will outlast any barrel.—R. A. K.]

## IT IS NOT THE GUN

EDITOR GUN DEPARTMENT: I was interested in the article entitled "The Repeating Shotgun" in the August issue by W. P. H., and the common sense answer given.

There are many shooters to whom the automatic or pump gun does not appeal, who are ready to charge up all violations of the game laws to this

type of gun. In my opinion the man who will exceed the legal limit with the repeating gun, is the same man who took pot-shots with the muzzle loader, before the breech loader came into use. Game hogs are born, not made by the style of arm they may happen to use.

The law here, in Pennsylvania, forbids the use of the automatic gun and rifle. I do not think, however, that this law will stand the test. The automatic style of arm does not appeal to me, but there are thousands of sportsmen who prefer them, and deserve consideration, as well as the advocate of the double barrel gun and repeating rifle. I use a pump gun and have never exceeded the legal limit with it, something that cannot be said for some of the users of the single and double guns here. It is not the gun but the man behind it who is to blame. Very truly yours,

HARRY T. GILLILAND.

## REBORING THE BALLARD

EDITOR GUN DEPARTMENT: I have a Marlin .22, Ballard action, with a very fine Schuetzen set trigger, which, fitted with Winchester peep and a Beach globe sight, has in its day made many a record, and, in fact, was the most accurate small caliber rifle I have ever handled. The barrel is practically ruined by corrosion, caused by the long and continued use of BB caps. The barrel, however, is octagon pattern, and heavier than an ordinary .32 or .38 octagon. You may judge, from the rifle weighing 8½ pounds, which is rather unusual for a single shot .22. Now, my idea is to have this rebored and rifled for a Marlin .25 special, Savage .30-30, or perhaps .32 W. C. F. or special, thereby securing a heavier arm, as I have wished, and if possible, a high-power arm for shooting at greater distances—and at the same time having a practically new barrel. Do you think this practicable, and could it be done at no very great expense?

I have also a Winchester .32-20, Model '92, at present useless to me, for I can do nothing with the open sights. When in the navy, and later, in the National Guard of the District of Columbia, I was fortunate enough to make top scores with the Krag, so perhaps my trouble now is some eye-trouble developed since that time. At any rate, I cannot draw a bead with the open sights that came with the gun, and I wish to have Lyman sights substituted.

Fearing that the tang is too hard for a gunsmith to tap for a peep sight, I have done nothing about it as yet.

What sights would you recommend for this rifle, for all around use, considering my trouble with the open sights, and can the rear peep sight be fitted by a local workman, or should the rifle be sent to the Winchester people for this purpose?



One more, which I hope is not too far "out of your line" to answer—noting the ad. in *Outer's Book* of the N. W. School of Taxidermy, I wish to know if you consider it practicable to gain a fair working knowledge of the art by a correspondence course. Yours, very truly,

G. T. BAILEY.

[You can have your .22 caliber Ballard rebores for any of the black powder cartridges or their equivalent in smokeless of the high velocity class, giving the same chamber pressure, but not for the high power cartridges. The Ballard barrels, such as yours, are made of soft steel, and not calculated for use with high power ammunition. Your barrel being heavier, might be sufficiently strong to withstand the pressure, but the rifling would soon wear out. The .25-36 Marlin is rifled with a 9-inch twist, the .30-30 with a 10-inch twist, these are in every sense high power rifles, and require the smokeless steel barrel. As you wish for a heavier caliber, I would suggest that you have your rifle bored and chambered for the Ballard .32-40-165, it is the best off-hand target cartridge, and an excellent hunting cartridge, with a killing range of from 300 to 500 yards. Reboring, chambering, and changing to center fire, would cost about \$5.00. The barrel would be as accurate, and last as long as a new one.]

The tang of your Model 1892 Winchester is drilled to receive the Lyman rear combination peep sight, and if you can get the proper sight No. 1 marked D on the bottom of the sight base, or No. 1 A, which has a rigid locking device, you can easily apply the sight yourself, and save expense. The reason you cannot use the open sight on your Model 1892 Winchester is probably because your eye has lost the power of accommodation. The distance from the eye to the rear barrel sight on the Winchester 1892 is much shorter than on the Krag, and your eye does not focus. You will find that the use of the rear combination peep sight will remedy this trouble. I would recommend the Lyman Rear Combination Peep No. 1 A, and for the muzzle, No. 3 Lyman Ivory bead front sight for your Model 1892 Winchester.

I have had no personal experience with the correspondence school of taxidermy, but I have been told that if one has a little natural aptitude for the work, it is possible to acquire a practical working knowledge of the art through a correspondence course.—R. A. K.]

### A GOVERNMENT DIFFICULTY

EDITOR GUN DEPARTMENT: I am anxious to secure a New Springfield Rifle, but not being associated with the National Rifle Association, I find it shuts me out from this privilege. I write to know if I could secure one through someone who is? Could you do anything for me in this line? Yours truly,

C. BAIN.

[I sympathize with you in your desire to get a New Springfield rifle. I know of several hundred very deserving parties who, by reason of having served in the Volunteer Service or National Guard, should be entitled to purchase, but who are barred through lack of membership in the National Rifle Association, or its affiliated organizations. There is at

present a bill before Congress which, if passed, will brush away many of the foolish obstacles which, under present laws, prevent so many desirable people from owning the government arm. I know of no reason why you can not buy a New Springfield or Krag from some one who, having conformed to the law, has secured one; the difficulty would be to find one. If possible to do so, it would pay you to join the National Rifle Association, or some of its subsidiary organizations, as there are many advantages in the way of securing arms and other ordnance stores at such figures as would soon pay the cost of membership and dues. I am sorry I can not do more for you in the matter.—R. A. K.]

### MAUSER THROATING

EDITOR GUN DEPARTMENT: It has been recently brought to my notice that some of the 9 mm. Mausers and Mannlichers are throated for a greater distance than others. Some are throated to such an extent as to make it inadvisable to use the load No. 4 recommended by me and published in *June Outer's Book*. These rifles with long throats force the 200-grain bullet to jump from the shell muzzle to land, thus allowing gas leakage and cutting. For the benefit of other experimenters please make a note of this in your next issue. Yours truly,

H. F. MARSTON.

### WHY DIDN'T THESE TWO BURST

EDITOR GUN DEPARTMENT: In a recent number of the *Outer's Book* I notice an article on, "What burst the barrel." Perhaps you can tell me why this one did not burst. This piece of metal which I enclose was placed in the muzzle of a Savage .22 caliber repeater model 1903, as a rust preventative, it was forgotten and a .22 short cartridge was fired from the barrel. The obstruction traveled about 40 feet and then stuck into a hardwood door about 40 feet from the bullseye. Of the bullet nothing was ever found but a small fragment less than one-quarter its natural size, and this too was found in the door about two feet from the target. You will note that the metal is bent and out of shape and that the end is upset almost to the diameter of the bore. When a boy, I had a little 20 gauge shot gun, a muzzle loader, that was fired with a bottle cork in the muzzle, without any ill effects. My .22 rifle does not show a scratch or mark of any kind that any of us can see and it seems to shoot as well as ever and that is a good deal better than we can hold. Yours truly,

A. A. D.

[It is not always easy to say just what bursts a gun barrel as each individual case invariably will show slightly different physical conditions. However there are certain attendant conditions, which viewed in the light of past experience and logic, enables those interested to reach definite conclusions in each case. Your rifle did not "ring," "swell" or "burst" for the reason that the obstruction (a flat soft iron split key) lay loosely in the muzzle of the rifle and permitted free passage of air out of the barrel ahead of the bullet. This is proved by the fact that the bullet struck the end of the split key driving it out. Had the obstruction formed an



air tight plug in the muzzle it would then have been a test of strength of air compressed between bullet, obstruction, and barrel, or between barrel expanding powder gases and breech. Your 20 gauge shot barrel did not burst because the cork sticking tightly in the muzzle did not offer sufficient resistance to compress the air ahead of the load.

I would strongly advise against the use of corks, muzzle plugs, or tompons of and kind in firearms is sooner or later they will be forgotten and the result is usually more disastrous to the weapon than in the cases you have described while the man behind the gun is not always immune.—R. A. K.]

## NOT FOR MUZZLE LOADERS

EDITOR GUN DEPARTMENT: I am a lover of guns (rifles) and have some good ones, one especially, a muzzle loading rifle or, more commonly called, patch and ball. It runs 180 to the pound, 44-inch barrel and is the most perfect shooting gun I ever put to my shoulder. Now I am very anxious to know if a Maxim silencer could be used on this gun. Would it be necessary to have a special catch pocket for the patch or would it go through the Silencer with the ball? I do not know Maxim's address or I would not trouble you with these questions. If you will be kind enough to send the address or all the information you can I'll be greatly obliged. Will it be asking too much of you?

Very truly,

FRED A. ZIKE.

[Am interested in your muzzle loading patch and ball rifle, and would strongly advise against equipping it with a silencer; it would not add to the appearance of your rifle, and give you no material benefit in return. A rifle carrying 180 balls to the pound, with a 44-inch barrel, has little if any recoil, and the noise of the explosion is so far from the shooter, and so light, that it would scarcely be noticed. To load a muzzle loader equipped with a silencer, it would be necessary to remove the silencer each time. You, of course, use black powder in your muzzle loader, and the silencer does not handle black as successfully as smokeless. Another thing that might give you trouble; fragments of the buckskin or linen patch would be able to lodge in the vortex chambers of the silencer and cause trouble. Whether you would need a special attachment to fit the silencer to an old type of rifle, would depend on the outside diameter of the barrel. As you have other guns, and might wish to equip some of them with the silencer, I like pleasure in sending you the address of the Maxim Company, which is Maxim Silent Firearms Company, 38 Park Row, New York City. I can heartily recommend the silencer on rifles intended for fixed Ammunition.—R. A. K.]

## FOR AMERICAN ARMS

EDITOR GUN DEPARTMENT: I have been a subscriber to your excellent magazine for less than a year and during this time I have learned much from its pages. I have been interested in shooting from my childhood, and at the age of 14 years learned to shoot with a flint lock musket which

saw service in the army under Lord Cornwallis during the Revolution. This gun has a 42-inch barrel and a 10 bore wad fits the bore exactly. Since this musket came into my possession I have had a number of rifles, all of American manufacture, and have never had occasion to find fault with any. I do not care for the articles by Crossman. I think he knocks America's products more than is wise, and I do not believe that the articles on the "Ross" rifle are of benefit to residents of our own country. I do not wish to be classed as a chronic fault finder, but I think the space devoted to such articles could be used to much better advantage in giving us information about the arms in every day use in this glorious United States. Oftentimes I think of the battles fought with American arms against those of the best European makes and wonder at the results. The majority of Jackson's men at New Orleans were armed with that famous American product, the Kentucky rifle, and a more deadly weapon, of its class, has never been used. The great Napoleon marvelled at its performance in this battle and at the time of Waterloo was preparing to arm a regiment of his best marksmen with this rifle. I do not hear of anyone making better scores than Sergeant Leushner and the Massachusetts man. These scores were made with American arms and American ammunition. The lever action is a good one, and the Lee straight pull is the action for speed. My own experience, which is not nearly as great as that of many others, proves to me that the "man behind the gun" is a more important factor than the gun itself. I wish to compliment you upon your magazine and upon your expressed willingness to aid anyone to a better knowledge of guns and ammunition. I sincerely trust that henceforth we may have more practical information, than comparisons of arms, to the detriment of the American products, which is largely due to the fact that they are our home product.

I want you to class me with the Americans, and my motto is: "My country, right or wrong, my country."

Respectfully yours,

G. C. BROWN.

## MR. TOPPERWEIN'S RABBIT

EDITOR GUN DEPARTMENT: I read the splendid article on revolver and pistol shoots in your last number and see that the writer spoke of the late Arthur Gould's book on pistol and revolver shooting. I have been searching for three years for that book and would like to know if the writer has a copy, and, if so, would he sell it? If not, does he know how or where I could get one. I had given up the search until I saw it mentioned in the article. I would like to see Topperwein stacked up against Gorman, Hanford, Harris, or the other good shots at the 20-yard or 50-yard S. A. target. They would make him look sick. I have seen himself and wife shoot out here in the east. His article on the jack-rabbit I thought one of the most remarkable things I ever read, not that he was not truthful but the style of his letter would lead young fellows to think it was easy and not bull luck. Yours truly,

JEREMIAH J. BUTLER.

[I think you can get a copy of Modern American Pistols and Revolvers, by A. C. Gould, by writing



to Arms and the Man, 1502 H Street, N. W., Washington, D. C. The book is out of print, but you may still be able to get a copy.

I was just a little amused at your remarks in regard to Mr. Topperwein's work with rifle and pistol. Practical shooting men agree that punching holes in a paper target at 10, 20, 30 and 50 yards, is but the kindergarten of the pistol shot. The expert target shot usually finds his wonderful skill, useless when he attempts to utilize it under practical conditions. Mr. Topperwein is master of the rifle and pistol, not only in the always spectacular features of snap shooting, but along the more practical lines of game shooting, rapid fire, wing shooting, etc. His account of killing the jack-rabbit is a modest statement of an actual occurrence. Anyone may make an occasional wonderful shot, but the training by which Mr. Topperwein's skill was developed, was such that things which look impossible to the average man, are comparatively easy for him. What Mr. Topperwein describes as possible with rifle and pistol, is entirely within the reach of the average American boy. Don't you think some of our so-called experts who require a hair trigger pistol, a gallery load, target sights, and 10 or 15 seconds to aim, would look sick if called on to face in a duel to the death, a man who could pick a marble out of the air with a .45 Colt with service load and sights, and trigger pull, as they come from the factory?—R. A. K.]

### THE HEAVY AUTOMATICS

EDITOR GUN DEPARTMENT: Will you please tell me which of the following automatic pistols have the greatest killing range and penetration: The Mauser .30 caliber, Luger .30 caliber, or the Colt .45 caliber, and which gun would be the most reliable as a belt gun?

I have used the New Service Colt revolver in the .38-40 caliber and like them fine. Is the .44-40 caliber superior to the .38-40 in the New Service model with the 7½-inch barrel? When using smokeless powder, will both these calibers burn all the powder with the 7½-inch barrel?

When used with smokeless powder, have not these calibers almost as great killing range as the automatic pistol? if not so, by how far?

Does not the backward movement of the automatic gun, when it is ejecting the empty shell, take considerable force from the bullet? Hoping to see my questions answered in your next issue, I am, respectfully,  
J. BROWN.

P. S.—Do the Winchester Company make .30 caliber Luger cartridges, or are they all made by the U. M. C. Company?

[The .45 caliber automatic pistol, as made by the Colt and Savage people, is the most powerful pistol of its type on the market today. It has the greatest killing power, carries a heavier bullet, and is the most reliable in action of the three named by you. At a recent test the Colt .45 automatic was fired over 3,000 consecutive shots without a single jam or failure of any kind. The .38-40 cartridge in a revolver is very accurate, but the .44-40 is preferred, as it is just as accurate, has greater stopping power, and is obtainable everywhere. The 7½-inch barrel will give better results

in any arm or caliber than shorter barrels, and combustion of smokeless powders will be more complete. Barrels from 5½ to 7½ inches in length will burn proper loads of smokeless powder adapted to weapons of that class.]

There is but little difference between the killing power of the .44 and .45 caliber cartridges adapted to the Colt revolvers and automatic pistols. The regular .45-40-250 in the single action arm revolver, still leads in shock and stopping power. When loaded with black powder it is slightly less effective, but still the equal of the .45 automatic when loaded with smokeless powder. The backward motion of the automatic does not affect the speed, range or penetration of the bullet. The bullet attains its maximum speed before the rearward motion takes place; the barrel travels backward only three-sixteenths of an inch, and this travel takes place after the ball has left the muzzle. Exhaustive tests have shown that the cartridge used gives equal results whether fired from an automatic or a solid breeched arm. All the big cartridge companies make both smokeless and black powder cartridges for the Mauser, Savage, Colt and Luger pistols.—R. A. K.]

### THE .41 COLT

EDITOR GUN DEPARTMENT: I have been reading the Outer's Book for a long time, and always find it very interesting, as I am a lover of a good gun. I always read the Gun and Ammunition pages first and I have found some very good gun information in your book. But among all the readers who describe their battery in your Outer's, not one has included the .41 Colt. I have a .41 Colt New Arm Special with six-inch barrel and it is a beauty. I can shoot the long or short, either black or smokeless ammunition. The gun is too large to be considered a toy and yet not nearly so clumsy as the .44 and .45 caliber and I rather think 200 grains of lead sufficient for any use the gun is liable to be put to, and the recoil is extremely slight as compared to the larger caliber revolvers. For a medium weight, hard hitting, accurate gun I claim, using the manufacturers' expression, "a gun without an equal." I hope to read of some other gun fancier with a little admiration for the .41 Colt. You truly,  
H. W. R.

### OLD TYPE ACCURACY

EDITOR GUN DEPARTMENT: The very excellent article by Maurice H. Decker, entitled "The Big Six-Gun in the Southwest," which appeared in your May issue, interested me exceedingly. The particular pattern of cap, powder and ball Colt revolver to which he refers, is apparently the last model of .44 caliber made prior to the manufacture of revolvers for metallic ammunition at the Colt factory. The handle of that type possesses the characteristics mentioned by him and the weapon is well-balanced and is generally very accurate.

About ten years ago I began to make a collection of Colt revolvers of the powder and ball type and have in it two of this pattern. One has seen some service, but is in excellent shooting order; the other is brand new and evidently is one of a number which were sold at auction by the govern-



ment several years ago when many of the obsolete arms left over from the Civil War period were removed from the arsenals. The handles on these two pistols are excellent, affording a firm and full grasp somewhat like that of the Bisley Model Colt revolver of today, which the manufacturers describe in their catalogue as possessing improvements over the single action army revolver of the familiar .45 caliber type. The breech of this powder and ball weapon is usually cut away on each side toward the bottom of the lock frame to facilitate

by a small copper cent. Another of this solid frame type, but .31 caliber, shows up in general shooting about as accurately as do pocket revolvers now manufactured. It has a barrel  $3\frac{1}{4}$  inches long. These latter arms have what seem to me to be fine handles, affording a firm grasp, and they are so formed that the barrel comes naturally on a line with the eye; you do not have to crook your wrist to obtain a good sight.

A peculiarity of most, if not all, patterns of the Colt powder and ball revolvers is that they were plain twist. The short bearing of the round balls were used, made this of according to modern ideas, but in even with long bullets, it was deemed



, although the increasing twist was  
ce uneven markings on the elongated  
ever, accuracy did not seem to be  
the arms were very steady in shooting.

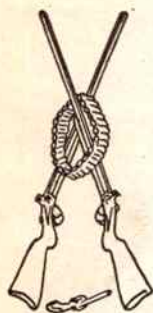
while (a great while, maybe, for black  
fier than ever in these days of smoke-  
me considerable pleasure and interest  
these old pistols out of my collection  
target, although my favorite weapon  
s a Smith & Wesson .38 square butt  
lver with  $6\frac{1}{2}$ -inch barrel, cartridges  
Bullseye powder.

, the new .38 revolver cartridges made  
ment are splendid shooters and have  
little recoil. Yours,

E. H. PARGELET.



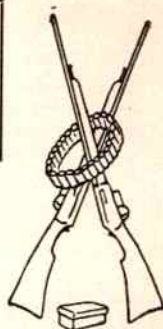




## GUNS AND AMMUNITION

EDITED BY ROBERT A. KANE

This department is intended to be a place for the exchange and discussion of views on any subject pertaining to arms and ammunition, from which no one with an idea to advance shall be barred. The only conditions are that the opinion must not be manifestly absurd, that it be expressed in courteous language and that no personalities be indulged in. Each opinion is printed for what it is worth and its publication does not commit the editor to the view expressed. The widest range will be permitted and our readers are invited to make free use of these pages, but it is important to remember that *under no circumstances will personalities ever be permitted.*



# The Metamorphosis of the New Springfield

By EDWARD C. CROSSMAN

IT came about in this way. Nearly a year ago Mr. Kane, always on the lookout for something that will prove interesting to the readers of the *Outer's Book*, suggested to me that I build an American bolt action sporting rifle, starting in at the bottom and building a rifle that would embody most of the desirable points of a fine sporting gun.

Other and more pressing matters delayed the commencement of the work, although it was always in the back of my mind. Along in March came Stewart Edward White, of Santa Barbara, California, and a member of the Los Angeles Rifle & Revolver Club, with the request to the writer, in his official capacity as club secretary, to purchase a service rifle. Mr. White also added that he wanted to take this arm to Africa with him on his forthcoming trip in the fall of 1910.

Like the "idea" that strikes the funny man in the comic supplement to the Sunday papers there came the realization of the chance presenting itself. The rifle was to go to Africa, to be used in rough country on a six months' trip and to be shot on dangerous game. Here was the chance to have the new rifles tried out by our foremost writer on outdoor topics and a fine game shot as well—a chance that could not be duplicated by any amount of service in these United States.

The idea was suggested to Mr. White, plans—somewhat revised later—submitted to him and back came his hearty assent. At the same

time he suggested that five rifles be built, for himself, J. L. Colby, Rogers and Weld, as well as the one already planned for the writer. It was just as easy to build five rifles as two except that the fall would be harder if the party undertaking the enterprise failed to turn out good guns. Then the trouble commenced.

You cannot sit down, take your pen in hand and in an off-hand way scribble:—

"Dear Uncle Sam: I am going to build some sporting Springfields. Will you please send me what parts are necessary and oblige."

First of all it is necessary to know just what parts of the service rifle you want and what are superfluous. The service rifle complete costs \$15.00, this minus the sling and accessories. The parts as finally worked out total \$10.73 without any boxing charge. And knowing what you want you have to list each part, its price, extend the price—if in the case of more than one part of the same sort—and have your footings total correct. Else the red tape bo-constrictor will catch your poor little order.

The order goes to the Adjutant General of your state who checks it over and then sends his order in turn to the nearest arsenal. The goods are then shipped to the club purchasing them.

It is hardly pleasing to send back an order for parts, wait six weeks or two months for the delivery of the goods—and then find that the collection does not contain something that is





"IT SHOWS ME WITH A PLEASED EXPRESSION, WHICH INDICATES THAT IT IS *before* SHOOTING"—  
STEWART EDWARD WHITE AND HIS SPORTING SPRINGFIELD



absolutely necessary for the rifle—such as the firing pin.

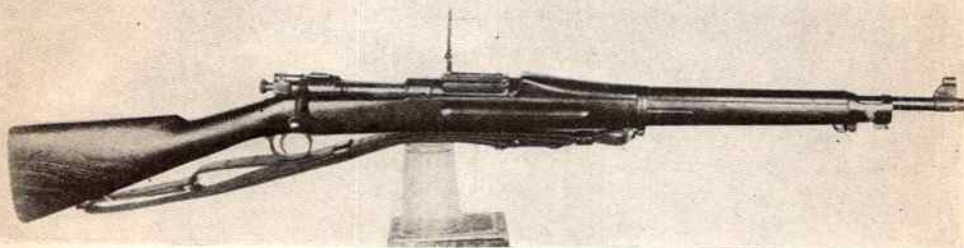
The order was finally sent off and then came the consideration of the details of the arm.

The use of the service rifle parts was decided upon for the reason that there seems to be nothing better available, even by going abroad for them. We might have used Lee-Remington parts and restocked and refinished to suit ourselves, or we might have purchased an ex-navy Lee Straight Pull and converted this from the ways of war, but either one of them would have been much inferior to the New Springfield. The Mauser action has won out all over the world until it is the standard military action. The New Springfield is the finest type of Mauser. Therefore we didn't waste much time in looking.

The writer did not start with the idea of turning out the finest rifles possible for anyone to make—this would have been comparatively easy by the expenditure of more money for labor—but to turn out rifles within reach

gun. The Lee-Enfield had a two-piece stock and the stock itself was all samee club, which let it out of the competition. Not one of them met with our ideas as to the proper shape of stock and above all of the correct shape of the pistol grip. We were to free-lance, pick the best of other men's ideas where we could and then use our own brains when the proper solution to the various problems could not be answered otherwise.

Piled conveniently on a nearby shelf lay the catalogues of practically every German, French, Austrian, Belgian and English makers, as well as one from Canada and all those from American armorers. Beside these were magazines—stacks of them—with the writings of other and much wiser gun cranks, Whelen, Hudson, Kane, Kephart, Haines, Gould, Van Dyke and Jenkins, a glorious host of the gentlemen who are in the habit of thinking with their own brains and not basing their opinions upon the entirely unbiased statements of the gun catalogues. And then as one more stalk added



THE UNITED STATES SERVICE RIFLE, THE NEW SPRINGFIELD

of the average sportsman and embodying the good points usually missing from the stock American sporting rifle. Cost therefore had to be considered as well as the things we thought desirable in the rifles.

Beside me stood a Ross, a Mauser, a Standard, a Mannlicher, a Marlin, a Lee-Enfield—borrowed for the purpose—a service rifle, a gem of a double express elephant rifle belonging to Fred Adolph of Rochester, New York, and divers shotguns, all offering suggestions as to how to make—or how not to make—the new rifles. All of them have some objectionable point or points which we desired to get away from. The Ross was clubby in the stock and the stock itself was too long to serve as our model. The Mauser—a Sauer made to the writer's order and probably the finest one in this country—failed to come up to the writer's ideas of proper shape of stock after shooting it prone. The Standard—but never mind the Standard.

The Mannlicher was too "skimpy" stocked to carry out the proper lines of a well designed

to the sheaf we had collected, might be mentioned the writer's own little experience with the various foreign rifles and much use as a buffer for the vicious kicks of the service rifles, Lee-Remingtons, Kraggs and Springfields in the past ten years.

For models of fine rifles—real gems of gun making—we have to go to England. The German-made weapons are excellent and will always be more popular over here than the English, for the reason that few of us are able or willing, or both, to pay \$100.00 and up for a finely adjusted English arm when we can obtain such splendid weapons as the Sauer-Mauser for half the price.

Therefore we went over the various English catalogues with a fine tooth comb for ideas that we could use without going broke in doing so. We went over our single English rifle, criticised the splendid German elephant gun belonging to Adolph. Then having read and selected and oftentimes eliminated with a groan some particular point we would like—such





MR. CROSSMAN'S SPORTING SPRINGFIELD

as the steel capped pistol grip with a hinged cover, we were ready to tackle the actual work of building the American sporting Mauser.

It will be remembered that the rifle was to be plain, that the cost was to be kept as low as that of a machine-made and somewhat inferior Sauer-Mauser, and therefore all the scroll work that sets off a gun's lines and other forms of gingerbread were to be dropped from the calculation.

Now unless one has the requisite skill to build such a rifle himself, all his calculations and all the selection of the good points of other guns would be in vain without the proper workman to execute his ideas. The writer hoped to find such a man, one who was merely a good workman and able to follow ideas set before him.

Now the ordinary gunsmith in this country—with all due respect to the gentlemen of the trade—is but little worthy of the name. He can file a key or put a spoke in a bicycle wheel or shoe a horse or mend a plough. A good gunsmith can also do these things without trouble, they are easy compared with the things he is called on to do in his chosen profession. But the converse is not true—that a man who can do all these things is also a good gunsmith. Most of our smiths are general repairmen and learned whatever gunsmith work they know by the occasional clawing apart of some unfortunate weapon that fell into their hands. Very few of them are gunsmiths in the European sense of the word, men who learned as apprentices under a good master and who had to turn out their "masterpiece" for the board

of smiths before being admitted to the great and glorious assemblage of real gunsmiths.

It is given to but few localities to have such a man, able to build a gun from the forging up to the engraving, who can build a pair of ejectors and fit them, who can re-rifle a barrel or engrave the lock plates—a man who has learned his profession as a doctor has learned his own and who didn't fall into it from a job tending a soda water fountain.

Such a man is Ludwig Wundhammer of Los Angeles, and to him, his beautiful workmanship, good ideas and grasp of what was wanted is due the greater part of the credit for the good rifles that were finally turned out. Wundhammer learned his trade in Germany, turned out his masterpiece after his apprenticeship and built fine guns for years before finally coming to Yankeeland. In California he was for years the right hand man of Slotterbeck, one of the finest gun makers in the United States, and well known to the old time riflemen. I know of but one man to compare with Wundhammer for all round beautiful work, that being Fred Adolph of Rochester, who built the elephant gun mentioned.

Of course we have our Popes and our Schoyens but they are fine barrel borers, not all round gun men. Pope for example, knows nothing about shotgun making or about stocking guns.

When one has the parts of a rifle already turned out, excepting only the stock, buttplate, sights and the other small accessories, the attention is naturally directed first to the stock.

It is this that determines for the most part, the balance and the "feel" of the rifle. If



STEWART EDWARD WHITE'S RIFLE



it is too short you will perhaps admire the finish but you don't "cotton" to the gun, it doesn't seem made for you. If it is too long it may hang well at your shoulder but still it doesn't leap to your shoulder as it should. It may lay your thumb against your nose or may allow your little finger's nail to slash your chin when shooting prone. It may drop not enough and compel you to "hist" up your shoulder and elbow or to crane down your neck.

To turn out one stock that would suit any man who might try it is an impossibility but it is entirely possible to strike a happies medium than the models followed by most of our American rifle makers.

If fitted with a pistol grip it is in the form of a wart stuck somewhere along the lower side of the stock and as much use in aiding you to hold your rifle as though it were not there. Or it may be full in shape—but never where it should be, close enough to the trigger guard to support the entire four fingers as you grasp the rifle and thus allow you to pull or squeeze the trigger without feeling as though the hand were going to slip rearward.

In our case it was a case of the famous recipe for cooking the hare in which you are enjoined to obtain the necessary ingredients before starting. Walnut stock blanks long enough for a rifle of the bolt class are not easily obtainable in this country if you are particular as to the quality of the wood. Imported wood is brought over only in the lengths suitable for the ordinary two piece stock.

The Ross people were applied to and they responded by selling us stock blanks of the right length and of splendid imported walnut for a price of about \$3.00 per blank. Wundhammer said he never saw a finer lot of wood, taking toughness, figure and direction of grain into consideration. In this we already had a start on the German makers, who for the most part use a brittle quality of walnut, albeit handsome in figure.

In due course of time along came the parts, each set consisting of the barrel, receiver, bolt and bolt parts, front sight fixed and movable studs, magazine spring, follower and floor plate, trigger guard, trigger, sear and the screws for the wood touching portions. Worse luck, there also came the rear sight bases, which we asked to have left off.

The rear sight of the Springfield is pivoted to a 2-inch band that passes entirely around

the breech end of the barrel and is prevented from moving by little pins and splines that engage in minute grooves in the barrel. With the movable base and the leaf removed, there remains this band about the barrel with two little "ears" sticking up fore and aft. The front one is the lip for the windage screw and the forward end of the movable base, the rear one is for the lip on the rear end of the movable base and both of them are part of the fixed band around the barrel.

This band is easily removed by driving out the stop pins but the barrel is blued only up to the band and there is a nice two inches of bright steel left at the rear end. Here was another problem.

We might add a wooden hand guard like that on the Krag carbine and cover up this unsightly place. This was Lieut. Whelen's solution. Or we might leave the base on the barrel, it does not look bad, particularly with the ears cut off. Or we might polish down the barrel and then reblue it.

White, Weld and Rogers elected to have their bases left on. Colby, a crank after my own heart, howled to high heaven at the idea and wanted the base taken off, the barrel blued until it couldn't be blued any more and the rifle gone over regardless of expense—which was renigging on our original idea of keeping the expense down to reasonable limits.

With the parts at hand and the stocks lying in the shop in all their unpromising ugliness, we were ready to build.

You would be surprised to see the beautiful barrel Uncle Samuel has on that New Springfield if the rear sight base be taken off and the barrel be polished and blued. A beautiful taper, I was going to say almost chorus girl-like, but will forbear, with plenty of strength where it is needed and yet not clumsy, with weight enough to prevent any buggy-whip contortions, it comes as near to being an all round good barrel as any I have seen. It has but one drawback—a trifle too much weight for work requiring the climbing of very dangerous mountains where perhaps a pack, camera and heavy canteen have to go along. Later I lugged one of the rifles, a four pound canteen, a two and a half pound camera and thirty rounds of ammunition over the steepest and hottest range in Lower California and could appreciate this slight increase in weight over the ideal. But this is another story.

[TO BE CONTINUED]



See page 412



## Some Colt .22 Tests

GUN lovers, who own the new Colt .22 revolver and have had more or less difficulty finding satisfactory ammunition for it, will be interested in the following report from Fred. C. Best, a well known Milwaukee gunman:

MY DEAR MR. KANE: It may interest you to know that I have done a little experimental work with the new Colt .22 caliber revolver. I have owned and still own a number of revolvers, but I have never done much shooting with any of them. While the target results obtained from the new .22 Colt were very unsatisfactory, this must not be blamed to the weapon, but should be charged to poor holding on my part. I endeavored to check up my target results by shooting with a Smith & Wesson .22 caliber target pistol having an eight-inch barrel; a .38 caliber Colt D. A., with a three-inch barrel; a Colt new Army officers' model, an Army Special with a four and one-half inch barrel and plain sights; and an Army Special Officers' model. The resulting poor targets for each of the above named weapons prove to me that the unsatisfactory results obtained in using the new Colt .22 were due to poor holding on my part and not to any defect in the weapon or the ammunition. I therefore omit the scores and merely give a fairly concise report of the action of the arms with the different kinds of cartridges used.

Target No. 1—Six shots Winchester smokeless cartridges. Revolver used single action. Cylinder turned hard after first shot. Extraction hard.

Target No. 2—Six shots Winchester smokeless. Cylinder turned very hard. Weapon hard to open. Shells were only extracted after extractor had been struck very hard blows with a piece of wood.

Target No. 3—Weapon cleaned before using. Six shots Winchester black powder ammunition (cartridges at least two years old). Cylinder turned readily. Extractor worked hard.

Target No. 4—Barrel not cleaned after firing preceding six shots. Fired six shots with Winchester black. Weapon closed with some difficulty. Cylinder worked well after entirely closed. Extractor worked hard.

Target No. 5—Barrel not cleaned. Six shots Winchester black. Cylinder worked fairly well. Extractor worked hard.

Target No. 6—Barrel and cylinder cleaned before using. Six shots U. M. C. smokeless.

Cylinder worked well. Extractor worked fairly well. Easier than preceding trials.

Target No. 7—Six shots U. M. C. smokeless. Cylinder and extractor worked well.

In using U. M. C. ammunition one cartridge was too large in diameter to enter chamber of revolver.

Several weeks later I again tried the revolver without keeping record of each string of shots. The cartridges were of U. M. C. make, smokeless powder, and the total number used was one box of fifty. The extractor gave less trouble than formerly but the cylinder sometimes turned very hard, owing to the expanded base of the exploded shells. This swelling of the shells, together with the failure of the trigger always to return to its proper position, made it impossible to use my revolver as a self cocker.

In my humble opinion the finish and workmanship of my revolver is not quite up to that of the Army Special, the Army Special Officers model or the older new Army Officers model, and I believe that some of the trouble experienced is due to burrs on the ejectors and other slight imperfections in the gun. The most trouble, however, seems to be due to the thinness of the cartridge shells and until our friends of the ammunition trust furnish us with cartridges especially designed and manufactured for this revolver, both as to strength of shell at base and as to powder charge, we will continue to have trouble.

I personally would like to see the Colt people get out a .22 caliber on the lines of the new .22 but fitted with checked trigger and checked wooden stocks like the Officers Model. Since the manufacturers of arms and ammunition appear to be sitting up and taking notice of what Mr. Crossman, Lieut. Whelan, yourself and others have to offer in the way of suggestions and criticisms, I hope that before long I will own a properly finished .22 Colt and will be able to purchase satisfactory ammunition for it. Yours very truly, FRED. C. BEST.

The excellent and impartial report submitted by Mr. Best seems to be the consensus of opinion on the new .22 caliber revolvers as received to date. While testing the different makes of .22 caliber ammunition in these arms it was found that some batches of each make would work well and give no trouble by swelling or sticking, either with black or smokeless loads. The smokeless loads gave most trouble by reason



of the shells expanding at the base, and the black powder on account of fouling of the barrel and at the mouth of the chambers. Accuracy with either load is very satisfactory, and notwithstanding the drawbacks mentioned, the .22 caliber revolvers are extremely desirable arms for the purposes for which they were designed. The excellent performance of some of the ammunition in these arms is ample proof that rimfire cartridges can be produced that will work perfectly in arms of the revolver type. One of the causes of trouble chargeable to the arm is a slight burr or rough edge left at the rear edge of the chamber and extractor spider which cuts into the soft copper shell and scores it while being pushed rearward with the ejector. This condition may be easily removed by the careful use of a half round jewelers' file or a piece of fine emery cloth wrapped around a small stick of soft wood, fitted to the chamber. The chief source of trouble is the stretching of

the thin soft copper shells under force of the explosives which causes the base to expand and fill the flange space between the cylinder and recoil shoulder. We believe that this trouble may also be wholly eliminated by making the shell metal heavier or if possible harder so that the shells would be less liable to swell and prevent rotation of the cylinder and render ejection difficult. Should the cartridge companies decide to make the shell cases of heavier metal we need not anticipate any trouble from miss-fires as the new arms seem to possess ample power to indent the metal, crush the fulminate and ensure prompt and strong ignition. We have the best of authority for the statement that the leading cartridge companies will soon so improve and standard their output of .22 caliber ammunition that there will be as little cause for complaint as to its performance in the small bore hand arms, as in the closely breeched target rifles.

## Antique Arms

IT is extremely gratifying to the gun editor to note the interest that is being manifested by gun lovers, in all parts of the country, in the history of the obsolete types of arms which have

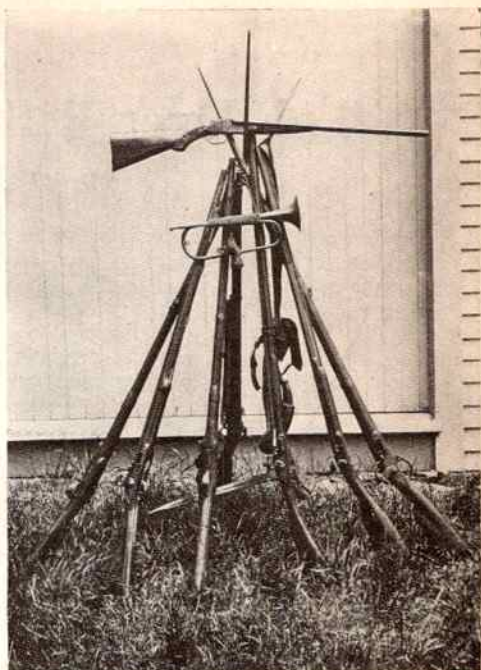
been pictured and described from time to time in the pages of the Outer's Book. Next to a new gun, the most interesting study to the "bred in the bone" gun crank is an old gun



A CORNER OF A GUN LOVER'S DEN

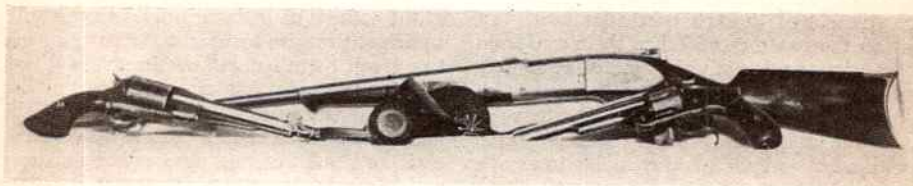


Indeed, many of us who appreciate the historical value of old weapons and their importance in supplying the missing links in the genealogy of gun evolution would willingly give our latest self-loader for a Cookson, a Hawkins, a Galcher or a Lancaster. Through the courtesy and generosity of Mr. H. W. Harmon, of Effingham, New Hampshire, who owns the collection and supplied the photographs, we are able to show a stack of war weapons of exceptional interest. Mr. Harmon describes the arms as follows: "Counting from left to right in the stack is a military arm of the flint lock type used in the war of 1812, sometimes loaded with shot and used as a fowling piece. No. 2 is known as a queen's arm. It was carried in the war of the Revolution by an American soldier."—The name "queen's arm" dates back to a period between 1558 and 1603, during which time the reign of Queen Elizabeth the name originated; it was also called "Brown Bess" and the "King's arm" during the reign of William III., 1689 to 1702. The original name Queen's Arm was revived during the reign of George I., and Queen Ann's war, 1702 to 1714. As the name was also applied to arms issued at various times by the English government, it would be necessary to carefully examine each arm individually and note the distinguishing marks to determine its age on the approximate date of its manufacture. No. 3 is an old military flint lock. No. 4 is a long-barreled fowling piece which was used by scouts in the French and Indian war. This weapon was in service in 1725. No. 5 is a type of the long barreled flint lock fowling piece commonly used in the period immediately following the Revolutionary War. No. 6 is a Hessian musket which was used in the War of the Revolution; most of the Hessian muskets used in this war were of German make, but some were veterans of the



A STACK OF WAR WEAPONS

wars of Frederick the Great and were purchased of him by some of the lesser German princes. No. 7 at the rear of the stack is a Civil War Springfield, a muzzle loader. The powder horn shown in the cut was made by an Indian in 1768. Herewith is shown a corner of Mr. Harmon's study, the number and character of the articles here displayed proves his title to full fellowship in the universal brotherhood of gun-lovers.





# The Deer Rifle and Its Work

By J. L. ELDRIDGE

MR. Newton's devotion to the archaic products of certain American gun factories would be overlooked, or regarded as a harmless personal idiosyncrasy if it was not for the fact that his frequent contributions to a magazine which has such a wide circulation among persons interested in rifles, and rifle shooting have a tendency to dissimulate statements and conclusions based upon erroneous hypothesis.

In beginning it is safe to assume that there is no subject, with the possible exception of history, that is made the medium of so much loose talk as rifle shooting. You hear men speak with conviction of what history has proven, the incontestable facts of history, etc., with sublime indifference to the fact that a tolerably accurate acquaintance with the principal events of the near past is a pretty rare accomplishment, so every catalogue student, and amateur theorist rushes into print to expound his pet theory in regard to rifle shooting without the slightest regard for laws of ballistics which the patient, and scientific investigations conducted by trained individuals both here and abroad have disclosed. I will not say that Mr. Newton is not familiar with the formula for ascertaining the energy of a projectile at any distance from the muzzle based on amount of energy developed at the muzzle, but I do maintain that he is not entirely frank with his readers when he quotes the imposing figures denoting muzzle energy, and fails to add that by the time his 500 grain bullet has traversed 200 yards nearly half of this tremendous force has vanished. This method smacks rather too much of manufacturers' catalogues.

However this oversight could be forgiven if he had succeeded in working out a satisfactory formula to guide his readers in the selection of the rifle suited to each particular need, but he has on the contrary added to their confusion by advancing an hypothesis that is absolutely ridiculous. For instance, the writer has known of a case where a woodchuck was shot through and through about two inches forward of the hips with a .30-30 bullet, and was able to escape into its hole traversing a distance of about thirty feet, and was found there still alive after an hour's frantic digging by two conscience-stricken hunters. Now if we are to assume the vitality, or shock-resisting power of an eight-pound woodchuck as the basis of calcu-

lation instead of a 200-pound deer we would be forced to conclude, according to Mr. Newton's method of reasoning, that it would be practically impossible to develop in any known form of small arm sufficient power to kill the latter quickly and painlessly unless struck in some vital part, which is, of course, just what we contend. In short, we have learned both by our own experience and that of others that a bullet weighing 150 grains driven through the heart, brain, or spinal cord of an animal will kill just as surely as one weighing 500 grains, and may be relied upon to kill at a greater distance from the hunter; the really important thing being to ascertain if possible what combination of caliber, pitch of rifling, and powder charge will most effectively drive former bullet, and all other considerations are aside from the main issue.

I have taken the liberty of criticising the form of Mr. Newton's article, but I must confess a decided sympathy with the substance; that is to say, that personally I am in favor of using a single shot rifle for deer hunting, especially within the state of New York. I believe there is a serious element of danger in permitting one man, or as has happened, several men to empty the magazines of lever action or automatic rifles at a fleeing deer in the hope that a chance shot would bring it down in a forest frequented by many deer hunters, any one of whom might be in range of the random projectiles. In deer hunting as in any other form of out-door sport the victory should come as a reward to worthy personal qualities, such as skillful shooting, patience, endurance, resourcefulness, and not as the reward of a blundering chance shot delivered at the risk of the life of another being. I believe there are enough men interested in deer shooting, and who are at the same time in favor of clean sport to bring sufficient pressure to bear upon our gun makers to compel them to manufacture a good modern up-to-date single shot rifle, such as the English have in the arm turned out by Westley-Richards, and at the same time discourage the manufacture and sale of the automatic monstrosities, and archaic lever action repeaters that are being thrust onto the gun-buying public.

The writer used a Remington No. 3, .32-40 for several years as a deer gun, but laid it aside two years ago to take up the 8mm. Sauer-Mauser, which was the nearest thing to his



idea that he could afford to buy. He has developed for this gun, which is model No. 250, a load considerably less in both powder and bullet than the regular charge, but which he believes to be a better load for the gun than that for which it was originally built, at least for deer shooting. My idea in turning to the

Sauer-Mausser was to obtain a gun light in weight that would balance as nearly like a shotgun as possible, and account of slower bolt action would more nearly approximate the conditions to be reckoned with in using a single shot rifle, in that one would have to take the same care in order to make the first shot count.

## The Springfield Barrel

By THE GUNNER

THIS is not written to call down or argue on the subject, but rather to give information in reply to various criticisms well set forth by B. O. L. T. in the September number. B. O. L. T. sets forth some incontrovertible facts regarding ordnance and the Ross rifle, which I will not attempt to quote or comment. But with regard to the inferiority of the 24-inch barrel of the model 1903 rifle, the matter is completely discussed in the report of the Chief of Ordnance for 1905.

As to accuracy, there is no other rifle on the globe superior to our own military arm, as is evidenced by the American team's performances during the past four years. Comment in further proof of the established accuracy standard of the Springfield is superfluous, as one has only to turn to the reports of the National Rifle Association for positive evidence.

With regard to the range of the projectile from the Springfield, the Ordnance report for 1905 contains tables of tests by a specially appointed board, who met at Springfield and Sandy Hook and tried various rifles with barrels from 22 to 30 inches long and with different styles of rifling.

The tests were very severe, at ranges of 500 to 1500 yards, and proved conclusively the superior accuracy and ranging power of the 24-inch rifle.

There were then made several rifles with this barrel and different front bands and bayonets. These were placed in the hands of 4,900 officers and men at army posts in various parts of the country. The opinions of these experts after handling and firing the 24-inch rifle and the 30-inch, were overwhelmingly in favor of the 24-inch barrel.

It is beyond questioning that the .280 Ross-Ely is a superior cartridge to our model 1906, with regard to range and trajectory. But it has not shown superior accuracy in enough competitions with the 1906 to entitle it to higher honors. The much admired straight pull bolt action in several models was rejected by our Ordnance Department as being inferior for military purposes, to the model 1903. This is not a statement that the 1903 is a better sporting

rifle, but is merely quoting the ordnance report on the action.

The .280 cartridge meets with favor in the opinions of a large number of ordnance officers.

It is well to note that the original model 1903 rifles were made with 30-inch barrels. This was reduced, after tests lasting two years, to 24-inch. At 1500 yards repeated firings showed the accuracy of the 24-inch barrel was one per cent less than the 30-inch and superior to the Krag 30-inch. The tests showed "that the degree of skill and effort required for its (24-inch) manipulation are less than the 30-inch under all conditions." "Recoil is not more noticeable." "It is three-quarters pound lighter than the 30-inch."

Reports of numerous cavalry officers and men favor the 24-inch rifle to the 22-inch carbine, as being more accurate, handier and more effective. Infantry men and their officers state that the 24-inch rifle is more accurate, handier and better in every way than the 30-inch.

As to the "long barrels and slow powder" principle being correct, I am not prepared to say, but it is rather odd that our Army experts choose the short barrel. Mr. Crossman himself, who brought the Ross before us so well, says that for hunting he would rather have a 25-inch barrel on his Ross than the 30-inch now on it. This also is rather queer.

The writer has used Ross .280 rifles lately, with 30-inch and 24-inch barrels and after handling both in different ways and shooting them, must, in all fairness express a preference for the short barrel. In several years use of sporting and military arms of almost every type, the superior handling and equal effectiveness of a medium length (24 to 26-inch) barrel have given cause to favor over the short carbine (20 to 22) or long rifle (28 to 36).

It would be impossible to quote the ordnance report here, but any reader can satisfy himself on this score by reading pages 76 to 81 of the Ordnance Report for 1905.

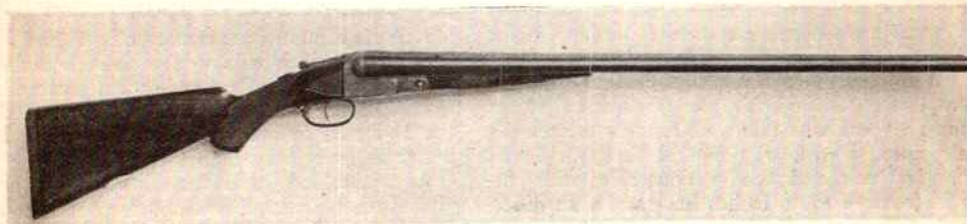
Please don't start a controversy over this, as the writer bases it on the army reports—surely authority of the highest class.



## Amateur Gun Decoration

IN the experience of every gun lover there comes a time when the desire to possess a finely finished and beautifully decorated arm becomes almost an all absorbing passion. We may plug along for years with the plainly finished but serviceable standard goods of our good American arms, but eventually we will experience a longing for the racy lines, the artistic engraving, the gleam of gold and the neatly carved and polished walnut which tastefully combined by the most skillful artisans go to make up the aristocrats among the millions of excellent arms annually produced by enterprising American armorers. We are all irresistibly attracted by beauty in some form, but when the object of our idolatry assumes the form of a perfectly proportioned and artistically finished gun, the average man will usually fall to the temptation. Sometimes the fact that a shooter has attained an enviable degree of

and describe a gun, the property of a local marksman, which through the combined effort of himself and a friend was transformed into a work of art. The arm selected for the work was a Parker double gun Grade "C," made by Parker Brothers, Meriden, Connecticut. The stock and fore-end are of richly colored, curly grained Circassian walnut, tastefully checkered in fanciful design. A thick tip of polished ebony into which is inlaid a flying cock partridge of solid 14 karat gold, protects the bottom of the daintily carved full-pistol grip. A six-pointed star of the same material, bearing the date of purchase, 1906, in clear cut figure is set into the center of the fore end near the hinge, filling an appropriate space left vacant by the many angled design of the checkering. On the lower edge of the stock, midway between the pistol-grip and butt plate, an oval plate of solid gold about the diameter of a silver half



THE PARKER GRADE "C" DOUBLE GUN AS IT CAME FROM THE FACTORY

skill as a marksman, among his fellows is made a valid excuse for indulging in the luxury of a more expensive arm. An ever increasing proficiency in the field, or at the trap, and constant association with a fastidious bunch of gun users soon educates one to an appreciation of the finer points of fit, balance and finish of a gun as well as its ballistic performance. The extent to which a genuine enthusiast will deny himself other indulgences to obtain the coveted weapon is limited only by absolute necessity. In these days of medium priced, well built, shapely, and perfectly fitted arms made by most domestic armorers, it is only necessary to add the ornamental work to produce a gun that will bear comparison with many of the best guns made abroad. To further illustrate my meaning and show the possibilities of American made guns for embellishment, I will try

a dollar is set into the variegated grain of the rich brown walnut, this escutcheon is finely engraved with a prairie scene showing a prairie chick in full flight. The massive hinge bolt and every screw head, and end of friction pin visible outside of the frame, is heavily plated with gold warranted to wear a life time. An oblong block of solid gold is set into the tang just in front of the safety and engraved with the words "safe" in large block letters; the contrast between the bright gold and the dark blue steel enables one to determine the position of the safety in dark or uncertain lights. The barrels are of high grade steel, 30 inches long and for about two inches from the muzzle are beautifully engraved with a scroll and leaf work designs. The breech ends are similarly decorated, the size of the design being exquisitely proportioned to the changing dimensions of the barrel. The neatly mill



straight rib is equipped with sights of solid old, hardened, and screwed into place with steel dowel pins. Both sights are perfectly round beads, the front sight is  $\frac{3}{8}$  of an inch, and the rear  $\frac{1}{2}$  of an inch in diameter. The slender shapely steel triggers are heavily plated with Roman gold and it would be difficult to imagine anything more attractive than the blue and gold of the guard and triggers and the delicate color blending of the case hardened frame. In addition to the hand engraved scroll work with spirited hunting scenes regularly supplied on this grade by the manufacturer, the owner has further beautified his favorite by adding several figures suggestive of the hunting field. What were vacant places in the frame are now covered with deftly drawn figures of small game. On either side of the

little jack snipe posed near a bunch of marsh plants so naturally that one almost unconsciously braces himself for the coming shot. Although elaborately engraved and richly inlaid the arm does not give one the impression of being crowded or overdone; it has a beauty that is distinctively individual. Like all the guns made by Parker Bros. it is a close, hard shooter; the right barrel is a modified choke which with the regular trap loads will pattern 310 pellets in a 30-inch circle at 40 yards. The left barrel is a full choked and will pattern 340 pellets under the same conditions. The gun weighs 7 pounds and 14 ounces and balances perfectly; it is equipped with double automatic ejectors built on the selective system. The gold and inlaid work was all done by the owner, Mr. Fred. W. Wendt. The engraving by a



A CLOSER VIEW SHOWING SOME OF THE ENGRAVING

frame and just to rear of the hinge is posed a pair of saucy looking quail about to take wing, while curving gracefully around the ends of the lock panel are two clinging wildwood vines with scarlet berries of red enamel. The trigger guard bears the grotesque figure of a woodcock with head cocked on one side in a characteristic listening attitude; the inside of the guard is utilized as the owner's name plate, which is artistically engraved in the always ornamental Old English text. The upper tang under the top snap is ornamented with the figure of a squirrel industriously gnawing at a nut, with its bushy tail thrown over its back or a wind shield. This pretty design fills a space usually left unadorned on other guns; to the rear of this is a running rabbit, and on the side of the top snap lever opposite the killing for the thumb is the figure of a plump

friend of his, Mr. Charles Erath, who learned his art in Germany. The blueing and finishing touches were applied by Milwaukee's veteran gunsmith, Steve Meunier, who has been with the John Meunier Gun Co. for over forty years. This beautiful arm not only has the elaborate ornamentation of specially built guns, but the fine thoroughbred lines as well. The cost of the work was merely nominal being but little more than the price of the old gold. It is extremely gratifying to American sportsmen to know that the material and workmanship and the correct and shapely models of the standard arms as turned out by our armorers is worthy of the best effort of the most skilled decorative artists. This is fortunate as it is with great satisfaction that we note the steadily increasing demand for the beautiful and artistic in every type of firearms.





## The Mauser Springfield 1906

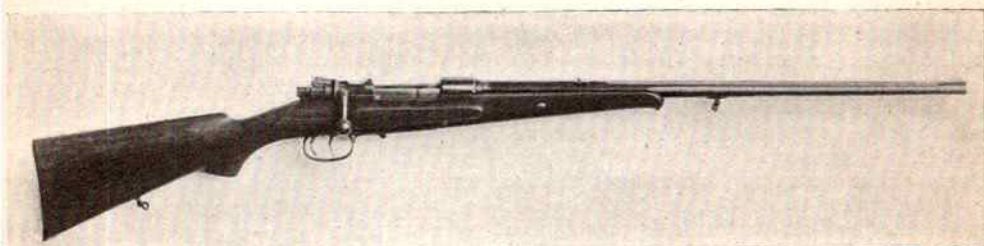
BEFORE the marvelous ballistic performance of modern military rifles had become known and a subject of interest to game hunters, several excellent cartridges were developed, whose performance might have been perfectly satisfactory to a majority of sportsmen had nothing better been produced. When the .30 U. S. cartridge, as adapted to the Krag, first appeared, it jumped at once into public favor among big game hunters, and whether used in a transformed Krag or a model 1895 Winchester, it is still a favorite in the hunting field; it has good range, speed and striking energy, and had it been made rimless instead of with a broad, clumsy flange, it would doubtless have been adapted to the several existing types of bolt action and self-loading rifles. For ten years following its appearance, the .30-40-220 Krag cartridge held first place among the knowing ones as a hunting cartridge in American game fields. The coming of the New Springfield military rifle in 1903 gave us a new rimless cartridge possessing such speed, energy and accuracy as to entitle it to classification among the best high power cartridges developed by any country up to that time. The invention and adoption of the Spitzer or sharp-pointed bullet by the Germans, prompted experiments by our ordnance department, which resulted in its adoption for our new military arm. During the exhaustive tests conducted by the U. S. ordnance department to determine the relative merits of bullets of varying weight and shapes, it was found that the 150-grain sharp-pointed bullet gave an increase of 600 feet per second over the 220-grain bullet; up to 2000 yards the velocity is greater and the trajectory is flatter; at ranges up to 1000 yards the energy is greater, while the accuracy is fully as good as with the 220 grain bullet; the penetration of the 150 grain bullet into white pine is greater at 500 yards, and approximately the same at 1000 yards as that of the 220-grain bullet. It was while making three experiments, with a view to increased effectiveness as a military cartridge, that the potential possibilities of the new shell as a hunting cartridge were suspected and in a measure developed. The tremendous advantage of practically eliminating trajectory at ordinary hunting ranges without loss of energy, cannot be overestimated. The ever alert and progressive sportsmen of America were not slow to note the advantages promised by the new cartridge,

chief among which were the unprecedented low trajectory and unsuspected killing qualities of the pointed bullet. Our sportsmen were seriously handicapped in availing themselves of the many advantages offered by the new cartridge by reason of the fact that there were no American arms adapted to a modern hunter's use, except the Model 1895 Winchester, that could be chambered for the U. S. military cartridge Model 1906. With their customary enterprise the leading American cartridge makers, foreseeing a demand for the new cartridge, began to supply it equipped with bullets of varying weights and shape with full and half mantles, offering a lure of ammunition admirable calculated to meet every requirement of target expert and big game hunter. It is eighteen years since the United States Government began to arm the several branches of the regular service and National Guard with a bolt action rifle. The excellent system of rifle practice in vogue in our military department, and the ever changing personnel of the army and National Guard due to peculiar conditions of enlistment and service, has resulted in the education of a vast number of young men in the use of the bolt action rifle. It is largely the demand of this new generation of unprejudiced young riflemen, aided by a little coterie of able and independent writers, who have popularized the model 1906 ammunition and created a popular sentiment in favor of a high grade bolt action rifle in sporting model, chambered for it. It is to be deplored that our domestic armorers who were well established when the good qualities of the new ammunition became known did not respond at once to the unmistakable call for a good bolt action hunting arm and thus fore-stall the entrance of foreign arm into the greatest natural market for sporting weapons in the world. Almost imperceptibly, and within the period of time measured by the development of modern high-power rifles, there has appeared in our country a vast number of people who, through cumulative industrial conditions and the rapidly developing resources of our country, have become what might be termed a "leisure class." These people insist on the best and most expensive in firearms, and if they cannot be supplied at home, they will obtain them abroad as no tariff can be made prohibitory where wealth is unlimited. Nor is the demand lim-



ted to the leisure class, the gun crank, the retired soldier or the African lion hunter, it is insistent and wide spread, and it was in well considered anticipation of this growing demand for such an arm, coupled with the evident reluctance of our own armorers to produce it, and the narrow gauge policy of congress in erecting

has an exquisitely modeled full pistol grip properly located and artistically checked, so that when in the act of firing one experiences that feeling of security and confidence so essential to a steady trigger pull and good marksmanship; the butt is of shotgun model, which tends to diminish the effect of recoil by distribution



THE MAUSER SPRINGFIELD, SHOWING THE WHOLE ARM

a barrier of childish restrictions between the national arm and the people that prompted a little group of progressives to appeal to a foreign armorer for relief, and with success. Through the courtesy of a good friend, who is an ardent gun lover, the writer has been privileged to examine one of the first foreign rifles to reach this country, chambered to take the New Springfield ammunition Model 1906. The rifle is known as the Sauer-Mauser, made by J. P. Sauer & Son, Suhl, Germany, one of the oldest and best firms of gun makers in all Europe. The Sauer-Mauser Springfield here described, is known as "No. 50" and has the Model 1899 action; it has a 24-inch barrel

and inertia; it has a hard rubber butt plate, deeply cross corrugated to prevent slipping. The wood work is finished in the dull oil "London finish" so universally used on the most luxuriously finished arms. The barrel is half-octagon, made from the best Krupp fluid steel; it is made as light as possible without sacrificing any of the strength essential to safety or stability. A finely mottled rib, milled from the solid barrel, tapers gracefully from receiver to muzzle, this narrow flat surface affords an ideal sighting plane, prevents the glint of bright sunlight from the polished metal and radiation of heat waves from a barrel heated with rapid firing. The locking and firing mechanism is



THE BOLT MECHANISM OF THE MAUSER SPRINGFIELD

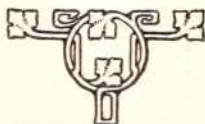
and measures 45 inches over all; the stock is 13 $\frac{7}{8}$  inches long with a drop of 2 $\frac{3}{8}$  at the heel and 1 $\frac{1}{8}$  at the comb; the latter feature is full and well rounded, which has the effect of placing the line of sight directly over the long axis of the bore. The one piece stock and fore-end is of beautifully grained, selected walnut; it

extremely simple and is undeniably one of the strongest and most reliable ever devised. The bolt is actuated by a strong handle at the side directly above the service trigger, convenient to the right hand. The movement of the bolt backward and forward extracts the empty shell, cocks the firing mechanism and places



a loaded cartridge in the chamber. When the action is closed the bolt is cammed snugly up against the head of the shell and locked by two solid case hardened steel lugs milled on the bolt head on opposite sides, which engage corresponding recesses milled in the massive steel walls of the receiver. This already ample locking device is further supplemented by a third lug at the rear of the bolt, which enters a recess cut in the bottom of the bolt bed. It is an established principle of rifle building that a breech block loosely fitted, or a bolt support by one locking only is not conducive to accuracy. With the Sauer-Mauser system of locking, a direct and uniform pressure squarely against the end of the breech bolt is ensured. The bolt consists of two principal parts. The bolt proper is a strong hollow cylinder of case hardened steel to which the powerful extractor is secured by a collar; this hollow cylinder contains the firing pin and spiral main spring; the entire breech mechanism may be easily disassembled for cleaning, without the use of tools and the barrel cleaned from the breech. The Sauer Mauser cannot be fired until the bolt is closed and securely locked. Should an attempt be made to pull the trigger before the bolt is completely closed, the cam on the cocking piece will strike the cam on the bolt, forcing the bolt to its closed position without firing the rifle. A safety is provided which, when turned to the right, effectually locks the rifle against discharge; when in this position the bolt cannot be opened; the position of the safety may be ascertained at a glance, or with a touch of the hand. The magazine holds five cartridges and is known as the Double Column System, it is flush with the outline of the receiver and does not project or in any way mar the naturally beautiful outlines of the arm. The magazine may be loaded with a clip from the top of the receiver or by removing the magazine which is locked by a cam lever in front of the trigger guard. Soft nosed cartridges may be carried in the magazine for an indefinite time without becoming mutilated by constant shifting. The Sauer-Mauser Springfield is fitted with fine double set triggers; the front one is

the service trigger and has a natural pull of about seven pounds, but owing to its excellent system of leverage and fine workmanship it seems much lighter; by setting the rear trigger and turning up the regulating screw, pulls of any desired weight from a pound to a hair may be obtained. The front sight is a long, neat block of steel, carrying a white metal bead dovetailed lengthwise into the extreme end of the narrow matted rib, a strong, durable sight and easily located in any light. The rear sight is a straight bar set for 100 yards elevation and a folding leaf sight good for 200 yards. The bar sight is rigid, is provided with a platinum line to mark the center and slopes backward to prevent radiation of light and to present a sharp clean outline to the eye. A Lyman peep or other forms of special sights may be readily applied to the arm if desired. The trigger guard is broad, well proportioned to the size of the arm and gives ample protection to the triggers under any conditions. Exceptionally neat sling swivels are provided for carrying the arm when not needed for instant use, a feature considered indispensable by the most experienced hunters. Specially made rifles may excel the Sauer-Mauser-Springfield in certain features, as adapted to special purposes, or in some minor detail of construction, or model but we believe that no arm, however expensive can surpass it in beauty of outline, balance fitting and finish, and in combination of arm and cartridge as adapted to the needs of the big game hunter. We regret that our home armorers have not seen fit to secure for themselves forever the market that is being created for the type and class of arms herein described. If the protection were given our home manufacturers is not sufficient to enable them to compete with foreign manufacturers for our home markets, we might further assist them by giving them government contracts for the manufacture of a certain percentage of the annual output of national small arms. This would give the government an available source of supply in case of war, and with trifling modification we could have sporting weapons of the same type, taking the same cartridge as our national arm and at trifling additional cost.





Hudson has an article on metal fouling of July 21st, page 329. In this article the doctor, not knowing into what he was falling—meaning the U. S. Court—states conclusively that while the .30-40 class *should be grooved* while it does not upset in time to give results, yet the bullet of the Ross .280 class *is* upset and by making it .002 inch too small without metal fouling, lengthens the life of the bullet and gives the highest accuracy. In other words this unfortunate doctor put on his reverse side the trifling detail of the cartridges being entirely different classes makes no difference in Mr. Glasgow's mind as far as I am concerned and I am therefore compelled to figuratively grab the unhappy doctor around the neck and drag him down with me into the reversing class. He said it—so did he, *mea culpa*—so's the other fellow.

Worse than this the doctor throws in the reverse lever on the Springfield 1906 cartridge, which is so ably championed by Mr. Glasgow and which he uses so often at Fort Sheridan or Camp Logan or some place on the north shore. Not satisfied with saying that the Ross .280 bullet should be made .002 inch too small for the grooves and does give accurate results made in this way, the doctor assures us that the Springfield 1906 bullet when made .002 too small also gives fine results and cuts out metal fouling which Mr. Glasgow undoubtedly has read of in some of the German or Austrian catalogues. I note that he doesn't read the shooting weeklies.

*"The idea has been tried out in the Springfield and has led to just the results anticipated—the limitation of metal fouling and greatly increased velocities for the same pressures, so that it now seems possible to get the 2700 feet seconds muzzle velocity with a 180-grain bullet without exceeding the pressure limits when the bullets are made .002 inch smaller than the groove diameter."*

Could any evidence be more complete? To the Supreme Court with the Doctor, one E. C. C. having already been thrown into the pit to keep the company.

Or perhaps the Doctor doesn't know any better, that having placed himself unqualifiedly on record as saying that the .30-40 bullet should fit to the bottom of the grooves, he should now tick to this fit through thick and thin and regardless of the change in more recent cartridges. This reversing is deplorable.

We trust that Mr. Glasgow will or has written Mrs. Sauer who is nursing his young hopeful, the 1906 Sauer-Mausers to feed the baby nothing but bullets .002 inch too small for the grooves.

I am deeply touched by Mr. Glasgow's tribute to his ancestors of Scotch persuasion. It must be fine to be that way, admitting that I haven't tried it. Don't think he will be called upon to uphold his principles and fight for anything

in his article however, as I find every statement in it qualified by: "I was under the impression; I will not say however; I do not make it as a statement; it would be easy to suspect" and other kindred expressions of absolutely positiveness. However I agree with Mr. Glasgow on the Sauer, congratulate him for the interest he has taken in it and the results of his interest and don't see what we have to argue about anyhow save the matter of dates and the use of the reverse lever—which I really could not avoid in view of the past showing of the .280 and its dissimilarity to the .30-40 and past military cartridges.

E. C. CROSSMAN.

P. S.—I note an interesting article by "B. O. L. T." which I read with pleasure. His opinion is one shared by a good many of us. Even for the manual of arms the slightly longer rifle is a little easier to handle.

Touching on the recoil of the Ross .280 I might point out that I did not say that the recoil of the .280 Ross is less than the Springfield which would not be true, but that it felt about the same to my case hardened shoulder. A person who shoots less might find one much harder kicking than the other. The Ross must kick more than the Springfield even with the rifles of equal weight. The Neonite is so much like our 1909 DuPont that the Ross cartridges are being loaded with it by a cartridge company on this side of the water instead of the English powder and therefore we cannot charge any difference in recoil to powder difference as there is practically none.

#### THE ROSS COMPANY'S ADDRESS

EDITOR GUN DEPARTMENT: I have been a constant and devoted reader of the Outer's Book ever since its birth and am deeply interested in rifle and pistol shooting. I admire your department greatly.

Could you give me the address of the firm making the "Ross" rifle and do they issue a catalogue? What is the cost of the Ross?

Yours, E. E. S.

[The address of the Ross Rifle Company is Quebec, Canada. They issue a very attractive catalogue, giving cuts and detailed information on their product. Their Model R sporting is chambered for the .303 British Cartridge barrels—22, 24 and 26 inches long. Listed at \$25.00. Model E Sporting, same cartridge and specifications, but better finish, \$35.00. Scotch Deer Stalking pattern, cartridge .280 Ross, barrel 26 and 28 inches, velocity 3100 foot seconds, special finish, \$70.00. The Ross Mark 2 Military target rifle, weight 8½ pounds, 28-inch barrel,



\$35.00. Ross Military target Rifle, 30½-inch barrel, weight 9½ pounds, \$45.00—R. A. K.]

### SOME SWEDISH GUNS

EDITOR GUN DEPARTMENT: I enclose a photograph which might prove of interest to your readers. The larger one shows three generations of army rifles as used in the Swedish army. At the top is a flintlock rifle of a model adopted in 1815. The next one is a modification of the 1849 model, used by the volunteer sharpshooters, and at the bottom is the 1867 model, made by the Remington Arms Co., 12.7mm. caliber. They are all in a very good condition and the Remington, being a good gun for seal and other big game, has not yet seen the end of its usefulness. However they make a good decoration for a wall in a gun-lover's den. Below are some other tools of war, among which the old flintlock pistol in the center is worth special mention. It has been used in the Crimea in 1854, and was brought to this country shortly after the war by a sailor relative A. G. PAUL PALEN, Westervik, Sweden.

### A NEW FOREIGN CARTRIDGE

EDITOR GUN DEPARTMENT: Perhaps it will interest riflemen to know that the "German Arms & Ammunition Factories," Karlsruhe, Germany, are loading their 7mm. cartridges with pointed bullets as follows:

a. Weight of bullet, 155 grains; muzzle velocity, 2900 foot seconds.

b. Weight of bullet, 140 grains; muzzle velocity, 2950 foot seconds.

These cartridges can be used in any rifle chambered for the regular 7mm. cartridge. This company also loads the 6.5mm. Mauser cartridge in the Portuguese model with a pointed bullet of 140 grains weight, muzzle velocity, 2940 foot seconds.

The 7mm. 155 grain bullet gives superior ballistics; its striking energy is over 3000 foot pounds. To get above results a new powder was necessary.

Yours truly,

RIFLEMAN.

### MUZZLE BLAST

EDITOR GUN DEPARTMENT: Re your issue June, 1910, page 610, "Testing of Muzzle Blast" by Mr. F. W. Mann, I beg to ask if you know of any experiments (those practically reversing the old "muzzle rifling") in which bore of rifle has been reamed out from muzzle towards chamber.

Say one takes a high-powered rifle, smokeless powder, soft metal (or steel jacketed ball), reams out to bottom of lands, full "bore" or

"caliber," say six inches out of one inch barrel, what happens?

What would happen to each round reaming?

What would happen to each round with increase of diameter?

Of course same cartridge should be used in each series curve.

Does a rifle need "lands" from chamber to muzzle?

A "large" question, but of interest to real riflemen, even those (your humble self) who are confined at present to theory.—W.

[Your letter opens up an extremely interesting topic, and unless all signs fail, one that will be warmly discussed by ballistic experts in the near future.

The subject of muzzle blast and its effect on the bullet, is one upon which doctors seem to differ. Mr. Perry D. Kent claims to be able to vent the muzzle of a rifle in such a manner as will reduce the muzzle blast, thereby improving the accuracy. The use of Maxim's Silencer, as demonstrated in numerous tests does not materially affect either muzzle, velocity or accuracy, although *all the gases* are arrested at the muzzle. Dr. Mann bejittles the effect of muzzle blast, and also the effects of muzzle mutilation. However, we who are just, practical riflemen, are as jealous of the muzzles of our favorite rifles as we are of the lips of our sweet hearts. No experienced rifleman will select a rifle that shows signs of wear at the muzzle. A rifle that is worn wide at the muzzle may deliver a certain per cent of its shots with average accuracy, but some will go wild. I have seen muzzle worn rifles, improved in their shooting by cutting an inch off their muzzle where worn smooth and wide, by too frequent, or careless wiping. The accuracy of an arm depends largely on the fit and position of the bullet at the instant of delivery, therefore any change of diameter that would permit the bullet to vary from the true center of the bore, would not be conducive to accuracy. To ream the lands out, leaving the barrel an exact groove diameter for a distance of six inches from the muzzle would not I imagine, affect the normal performance of the arm to an appreciable degree if the bullet has at this point attained nearly its maximum speed, and if the twist is uniform its maximum degree of spire also. Reversing the order of things, and shooting a bullet through a barrel, smooth from chamber to rifling beginning six inches from the muzzle, the result would be more problematical. With high power cartridges loaded with certain brands of smokeless powder, the resistance afforded by the pitch of the rifling is necessary to develop the full propelling force of the powder. In England some years ago, in an endeavor to



## Gun and Ammunition Department

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H.F.

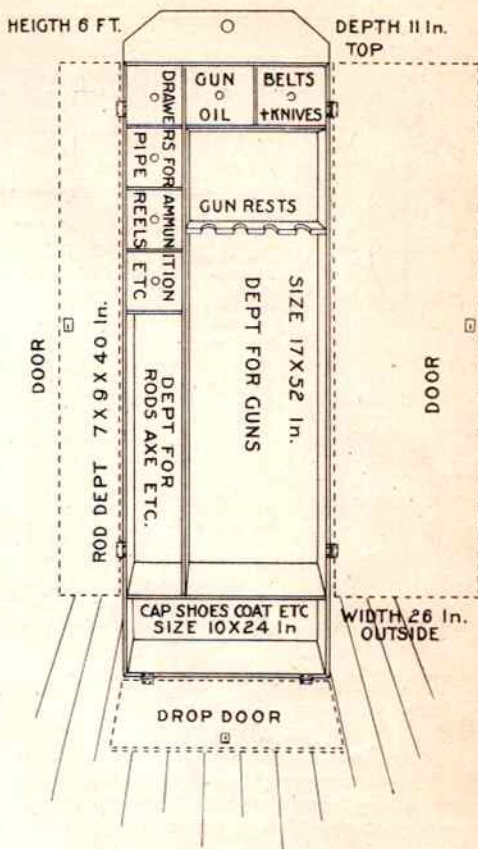
ation gun that would shoot all cartridge, experiments were gauge barrels, rifled for three or the muzzle end; with a round ball fair degree of accuracy at limited obtained, but no great advantage by the experiment, and nothing Most good rifle makers bore trels with a slight taper toward the so that the bullet fits tighter at the than at any other point; when other are right, this ensures a perfect delivery. the muzzle or bore from any cause, is than the bullet, the gasses will crowd past bullet at the point of least resistance, de- ing it from the true center of the bore, ing it to tip or wobble. I am of the opinion t all rifles, whether intended for the use of ack or smokeless powder, should be rifled om chamber to muzzle. My reason for this s that with full length rifling, the pressure is ore uniform, the spin is imparted gradually s the velocity of the bullet increases, greater ower may be developed, and an element of anger eliminated. I have seen at least two ew Springfields burst near the muzzle, under ircumstances which left little doubt that the ouble was caused by metallic fouling. The ifling of the new Springfield is .004 of an inch eep. Suppose the rifling were at the forward nd of the barrel, and the bullet traveling at a peed of 2700 foot seconds should strike the nds of four or six lands each .004 deep, I am inclined to think the results would be more isastrous than those produced by a few flakes f metallic deposit.

Reversing conditions, if a section of the muzzle end of the barrel were left unrifled and f a diameter small enough to insure perfect elivery, I believe the spin of the bullet would e materially lessened; not only this, but the rooves left in the bullet by the lands would rnish channels for the escape of gas past the ullet, which would cause gas cutting. This ould soon destroy the acknowledged seat of ccuracy in the rifle.

Dr. Mann has proven that the upset of a ullet takes place in the first ten inches of barrel ear the chamber. This being true, any in- curacies caused by enlargement at the muzzle ould not be corrected by the upset of the ullet.—R. A. K.]

### A HOME MADE CABINET

EDITOR GUN DEPARTMENT: In the August sue I noticed drawing and article in regard to ie gun cabinet planned and built by Mr. Decker. enclose drawing and dimensions of cabinet I lanned and had built about eight years ago.



My recollection is that it cost me about \$16.50, but think the price at present is at least twenty-five per cent more. Not being handy with tools, I sent a drawing of what I wanted and had G. W. Hudson & Son of Ellsburg, New York, build it. For convenience I do not think it can be improved on as you have a department for every part of equipment, though if I were ordering another would want it a trifle wider.

I think the double door is an improvement over the single, as there is not so much strain on the hinges, and you need open only the department in which the article required is stored. Both upper doors have locks taking same key; door at bottom has a turn knob to open, and top of cabinet I use to store the camera and case on.

No sportsman should be without a cabinet of some kind. I am certain that none will be who have once used them. They are not only a great protection to guns and equipment, but when you want to use any part of your outfit, you know just where to find it and in perfect order.

Very truly,  
HARRY T. GILLILAND.





## GUNS AND AMMUNITION

EDITED BY ROBERT A. KANE

This department is intended to be a place for the exchange and discussion of views on any subject pertaining to arms and ammunition, from which no one with an idea to advance shall be barred. The only conditions are that the opinion must not be manifestly absurd, that it be expressed in courteous language and that no personalities be indulged in. Each opinion is printed for what it is worth and its publication does not commit the editor to the view expressed. The widest range will be permitted and our readers are invited to make free use of these pages, but it is important to remember that *under no circumstances will personalities ever be permitted.*



# The Metamorphosis of the New Springfield

By EDWARD C. CROSSMAN

### PART II

THE method of attaching the barrel to the forestock was the cause of a little studying. The band of the service rifle was out of the question on an arm following the general lines of the imported Mausers. Nor was the American sloppy method of slotting the barrel for a fastener particularly appealing. One particular make of high power rifle has a neat slot cut in the barrel for the rear sight and another one cut nearly opposite for the forestock fastener. The result is a barrel that one can spring with the bare hands and little effort and that whips all over the landscape. We finally bought regular fasteners from the Ross people, consisting of a thin steel ring passing around the barrel and carrying a lug on its bottom side. This is threaded to receive the end of a combined fastener and sling swivel. A bushing is set in the wood and with this stock fastener screwed up the stock is fastened firmly and the barrel is clear of any holes along its surface. Swivels to correspond were set in the butt. The stocks followed in general outline that of the Sauer-Mauser, having the same flat shaped part where it passed over the receiver and magazine and the same slightly flaring forestock. However the details were far different. First of all came the question of length. Here are some measurements of our American rifles. Marlin Model '93, '94 and '95, length 13 inches with rifle butt,  $13\frac{1}{2}$  inches with rubber. Model '92 is the same. Winchester

'94, '05 and '07,  $13\frac{1}{2}$  inches, drop  $2\frac{1}{2}$  inches. Stevens entire Schuetzen line, 13 inches, drop  $3\frac{1}{4}$  inches. Standard,  $13\frac{1}{4}$  inches.

White and the writer are about the same height and build, height about 5 feet 9 inches, spare built, long armed. Colby is about an inch shorter and also spare built. Rogers and Weld didn't care. We finely settled on  $13\frac{1}{2}$  inches as the length for all excepting Colby's rifle. Colby has a shortened trigger finger, due to a mishap when young and therefore the hand has to be pushed well forward to get the finger well around the trigger. As this would make the stock longer to all practical purposes, we made this stock  $13\frac{1}{2}$  inches long.

The drops we decided to make 3 inches, measuring from the actual line of sight through the front and rear sights. But one of the most important factors to making the guns come up in line with the eye was the slight cast-off used by Wundhammer. A cast-off is seldom used by Americans and is therefore almost unknown, but this is by no means proof that it is not very desirable if used with a little sense. By "cast off" is meant the setting of the stock a trifle out of the line of the gun, either to the right or to the left. By casting off the stock to the right, the eye is brought more in line with the center of the barrel and therefore with the sights.

The question of cheek pieces was debated quite a little and finally decided in favor of them.





A STUDY OF THE STOCK, SHOWING FINE ENGLISH CHEEK PIECE

For a model we use a fine cut of a Holland & Holland double rifle. There are some cheek pieces—notably those seen on the Schuetzen variety of rifle—that are hideous in appearance. The model selected is a neat oval shaped affair, not too high nor too flaring and it adds to the appearance of a fine rifle.

This is a form of stock rarely seen in America as it is of course more expensive to make but when a person has used a properly cast off stock with a neat cheek piece he will rarely select a stock made any other way if he has his choice. It might be said, en passant that Lieut. Whelen's sporter Springfield is made with the same form of cheek piece and he specifies this form on a new Ross he intends getting and of which he wrote me recently.

The pistol grips on these rifles were made with a view to their utility, not merely to enhance the appearance of the rifle as many makers seem to believe is their only purpose on the stock.

They were of the "full" shape, square ended and capped with horn or left plain as our cranks fancied. The diameter of the grip in each was fixed at  $4\frac{1}{4}$  inches. The Ross I have

is about  $5\frac{1}{2}$  inches and is too large. Likewise I have a light 12-gauge Baker with grip  $4\frac{1}{4}$  inches which is a trifle too small for the normal hand, besides weakening the wood down to a dangerous degree for a hunting rifle.

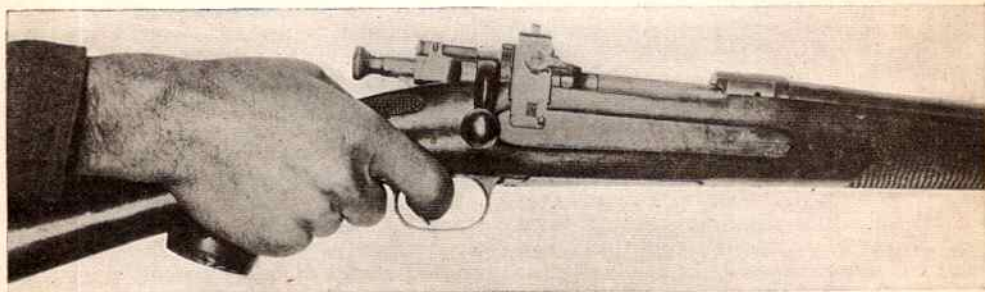
From the point of the grip, where the cap would come, to the center of the trigger measures 4 inches. Try the first pistol grip you find and see how much longer it is and of how little use it really is.

Across the butt, the stocks measure  $1\frac{1}{4}$  inches, from heel to toe  $5\frac{1}{4}$  inches. If you will compare these dimensions with the ordinary stock you will find that the sporter Springfields were quite full stocked, which is correct in rifles of heavy recoil and adapted to shooting in very rough localities.

It is hardly necessary to say that those relics of the dark ages, the rifle butt plates, were applied—not—to our rifles.

I shudder to think of a Springfield with a rifle butt plate and the recoil all coming on the bottom two inches of the curve.

For my own rifle I sent to Schoverling, Daly & Gales of New York City and through them got from the Sauer factory a checked steel butt



SHOWING THE NATURAL AND EASY GRIP OF THE HAND IN THE PISTOL GRIP

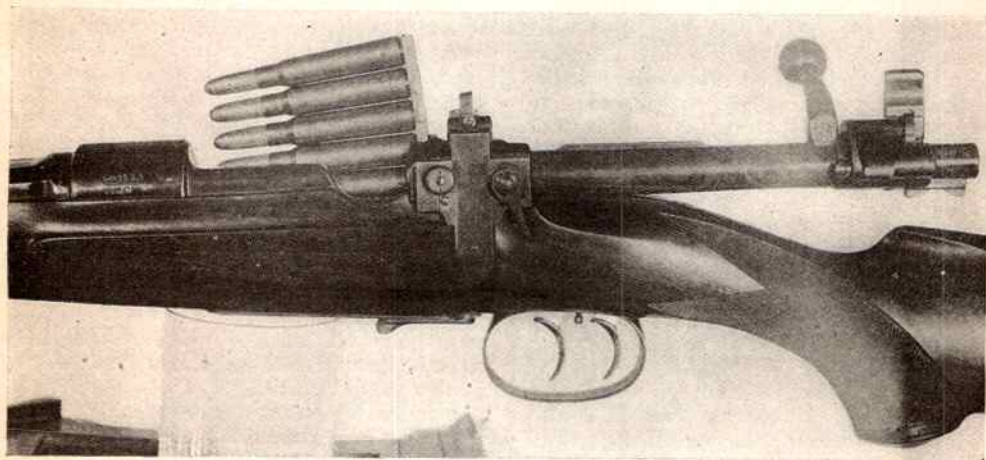


plate, similar to the one on my Sauer-Mauser, made with a peculiar file finished surface that clings to any fabric no matter how slippery and fitted with a trap 2 inches long by  $\frac{1}{2}$ -inch wide, lying flush with the surface of the plate and designed to cover an opening in the stock in which the user can carry what he pleases.

A lady of my family, for whom one of these rifles is being built, is much interested in this trap. I suspect her of planning to carry a powder-puff therein—are you married? Else you won't save what a powder rag as used by the fair sex is. Gunpowder is not meant. But while the trap may be used to cover a receptacle for lunch, a hiding place for powder-puffs or in a "dry" country as a little blind pig always with you, it is far more useful as a place to carry a pull-through, a spare striker and one spare cartridge. As to this latter article, the writer

the recoil falling entirely on one fine rifle with the stock split in two tang, through the shock of recoil in part instead of on the recoil plate of the magazine. You will find many rifles fitted so that you can stand off your hat between the wood of the stock and the steel parts. I could mention names, but there's no use, you can find them for yourself. It's the same old tale, hurriedly made up, varnished and turned out with the care accorded a cigar box and costing about as much, then turn jammed on a collection of metal parts which the loving care of trained gun makers has of course been expended. Result the \$15.00 American sporting rifle. Fine gun for the price but the price is not enough for the sort of work we should have.

The checking of the wood parts was of the



THE WRITER'S SAUER-MAUSER WITH CLIP READY TO PUSH INTO MAGAZINE, SHOWING THE THUMB GROOVE AND THE WRITER'S SPECIAL SIGHT

has on more than one occasion found himself with a rifle and no cartridges with him, such as going to or from a rifle range and had occasion fervently to regret the absence of the ammunition. Also in the hunting field you may shoot up all your cartridges but ever there will remain, unthought of until the last moment, that last cartridge tucked away in the stock of the rifle, like a forgotten dime in your vest pocket and as handy, if that dime happened to save you from walking home.

It is given to but few American riflemen to see such fitting as Wundhammer can and does do. Not only is the junction of steel and wood perfect from the outside but every portion of the steel touching the wood, lies snugly whether in sight or not. The result is that there is no danger in the stock splitting from the shock of

highest grade and the pattern exquisite in its grace and simplicity. If you have ever seen a fine Parker shotgun or one of fine European make you have seen checking of the Wundhammer grade.

In the finish of the stock Wundhammer laid himself out with the result of getting a mighty pretty stock but one that could be improved upon—as we did later. The finish was like the very high grade shotguns with the hand rubbed, bright finished stocks, not varnished but with the hard glazed surface.

This is fine to look upon but shows every scratch and glints like a mirror. Later on in the game we had him apply a dull oiled finish which I regard as being the only correct one for a sporting rifle.

When we came to the finish of the metallic



and the government finish of the good enough for any one, although as the handsome blue on the Sauer—the exquisite—and I am conserving the adjective—case-hardening. Schilling, seen on his Mannlichers users.

Arsenal blue is a good durable finish, one that does not wear off when it is touched. Some bluing I have seen. This looked well on the rifles finished up with the rear base left on the barrels and therefore rebled.

Wundhammer's blue was of course still handsomer and to my mind ahead of the brighter blue of the Sauer-Mausers.

The bolts as they come from the arsenal are quite rough, blue in color and sand paper in surface. A little swapping around with members of the militia to which I belong gave us some bolts that had a smoother surface and then a little elbow grease applied while working the emiered bolt put the things in working order.

My own and Colby's as well were taken to a nickel-plating works and buffed to as high a finish as possible. But queerly enough this buffing seemed to expand the extractor collars and both bolts came back with this collar loose and requiring a little effort to replace the extractor over it. The foreman of the works swore that the heat of the buffing process had done it, anyhow we swore off on that particular finish and went back to the good old method of emery. In this the bolt and all friction parts are oiled, then sprinkled with powdered emery. Then the victim takes the gun and as many times per day as he can, works that bolt back and forth until the emery cuts off all the roughnesses that interfere with the working of the bolt. Afterwards a gasoline bath of the taken apart rifle and a good application of 3-in-one oil and 1340 graphite puts the rifle in shape for a crank hunter.

Occasionally, my hand slips off a bolt handle in a skirmish or in rapid fire with the Springfield. Therefore we had a half-inch circle of checking applied to the under side of the bolt handle where the forefinger strikes it and were troubled no more in this way. The triggers

were also checked. Get a file, criss-cross your own and note the improvement.

In the Springfield the magazine follower has a square rear edge that holds open the bolt when the magazine is empty and the cut-off is turned on. This is to prevent the soldier from working the empty rifle and snapping it in the excitement of battle, under the impression that he is firing the rifle. Examples of these were found with the Krag.

None of us contemplating getting quite that excited, we cut off the rear corner of the follower permitting the bolt to slide over it without pressing it down with the fingers. It is a small matter but it compels the user to either practice working the bolt with the cut-off turned off, which prevents the bolt from traveling back the full distance or else to press down this follower with his fingers, which is no practice at all. And again in replacing the bolt in the rifle, one has to push down this follower while the bolt is being inserted, a slight nuisance when the follower is covered with mobile lubricant or graphite and one desires to keep his paws reasonably clean.

The cut-off on the Springfield is a flag shaped piece, pivoted in the receiver where the Mauser bolt stop comes. This has shoulders that project in the path of the bolt and stop it either just short of engaging the top cartridge or far enough back to do so, has it may be turned "off" or "on." Turned half way up both shoulders disappear from the path of the bolt, leaving it free to slide out to the rear. I also wish to remark parenthetically, that if you are in the habit of practising with the rifle held at the shoulder and the bolt worked rapidly from this position, see that your cut-off is turned clear up or clear down. If it is half way that bolt shoots out to the rear under the impulse of your pull, doesn't hit anything to persuade it to stay with the rifle and then you've Halley and all the rest of the star sharks backed off the landscape for discovering new constellations. I speak somewhat feelingly on this point.

Colby's aesthetic taste was fairly jaundiced at this cut-off with its somewhat large "OFF" and "ON" engraved on its sides. It is not a particularly pretty effect. Therefore Wundhammer cut down the flat shaped part and the obnoxious words on Colby's rifle disappeared.

[TO BE CONCLUDED]

See page 436





# That Cartridge Mystery

By CHAS. NEWTON

THE article with photo published in the September number of this magazine, describing the experience of a correspondent, or of his patient, with a blank cartridge for the United States army rifle certainly presents a very mysterious situation and one which grows more and more mysterious the more it is examined.

In considering it it might be well to ascertain just what the cartridge was supposed to contain before it was placed in the stove and we find the government specifications provide for loading it with a charge of ten grains E. C. smokeless powder in the shell and a hollow paper bullet which contains six grains more of the same powder as a bursting charge, the object of this bursting charge being to destroy the bullet as soon as it left the muzzle of the rifle. These specifications have been changed now so the present blank cartridges have no bullet but merely a wad at the muzzle of the shell; but this cartridge must have been one of the 1906 model above described.

As to the conditions found, there was in the shell about fifteen grains unburned powder. This being five grains more than the original load, it was doubtless estimated rather than weighed, and as the E. C. powder used (the brand found in the shell is not stated) is very light, it was doubtless overestimated. However that none of the powder in the shell was burned is pretty clearly established not only by the amount found there but also by the fact that the base of the paper bullet was not driven out of the muzzle of the shell. We are not advised as to whether the primer had been discharged or not, nor as to whether the primer had been struck by a firing pin but missed fire and then shell thrown away for that reason and this information would assist in throwing light on the subject. The writer believes that the primer had never been exploded because, regardless of the pressures stated to be developed in firing them, he once loaded a primed shell for a .30-30 without putting in any powder. The explosion of the primer forced the metal cased soft point bullet into the rifling and along the barrel for about a foot, thus indicating sufficient pressure to have driven the base of this paper bullet out of the shell.

Therefore, I think it may be assumed that the powder in the shell was not ignited and the primer was not discharged, and that the ex-

plosion which took place was solely that of powder placed in the bullet.

In considering what was the object which struck the lady, we are again short in our evidence as we are not told whether it was a coal stove, wood stove or gas stove in which the cartridge was placed. If it was a coal stove the missile might have been a small piece of coal set in motion by the force of the explosion. Also it might be, as suggested by the editor, a piece of compressed smokeless powder since, as shown by the fact that some of the bursting charge of powder remained in the bullet unburned, as soon as sufficient of the powder had burned to enable the pressure to burst the paper bullet, the pressure fell off and the remaining powder ceased to burn and may have been driven along as a missile, with something the effect of balled shot.

But the most interesting part of the matter is the suggestion that the explosion of a charge of powder in a rifle creates a vacuum in the shell into which the air afterward rushes.

It would be of great interest, not only to the readers of this magazine but to every engineer and scientist, if anyone could demonstrate how such a vacuum could be produced or that it is in fact produced under such circumstances. Every observed phenomena is against it and it is impossible under natural laws.

What "caved in" the shell in question I do not pretend to say but that there was any "vacuum" about it is preposterous. The powder in the shell was not burned, and the gases from the primer, if it was ignited, did not escape, because the base of the bullet remained in the muzzle of the shell, therefore any gas which was developed in the shell remained there and if it had any effect at all would help sustain the wall of the shell against any pressure from the outside. The shell itself, being of a good thickness of strong metal and curved so as to obtain the benefit of the arch principle, would require hundreds of pounds pressure per square inch to crush it in, while the greatest pressure obtainable from a vacuum is but about fifteen pounds per square inch, that being the maximum pressure of the atmosphere. Consequently, had anyone slipped a vacuum into this shell "unbeknownst like" and had it been the only perfect vacuum known to science, the only



result would have been to *drive the base of the paper bullet back into the shell.*

These propositions conclusively establish that there was no vacuum question involved in the shell under discussion, but as to the proposition that there ever exists any vacuum in any shell, caused by its discharge, this has been exploded long ago.

The firing of a cartridge is merely the liberation within the bore, behind the bullet, of a quantity of gas under a more or less high pressure which pressure decreases during the latter part of the movement of the bullet along the barrel and when the bullet leaves the muzzle the pressure is let off the gas and it consequently falls to the ordinary atmospheric pressure but does not go below that point.

Many seem to think, as witness Dr. Mann in his book, *The Bullet's Flight*, where he discusses the question of vented barrels, that because the *movement* of the gases is directly toward the muzzle they have an overpowering innate desire to escape by that particular way, while in fact the pressure of the gases is exerted in all directions equally, they pressing backward against the breechbolt and sidewise against the chamber and bore with just as much power per square inch of area exposed, as they press against the base of the bullet. Give them a chance to escape through a pierced primer or a fracture in the side of the barrel and they will make just as good time as they do towards the muzzle when the breech remains tight, as the writer can certify from numerous experiences which have fallen to his lot while inquiring into the mysteries of new loads.

Therefore while the bullet has a heavy pressure of gas against its base as it passes along the barrel, which gas follows it out of the muzzle,

other gas is pressing equally hard against the inside of the shell head, and while the gas in the forward portion of the barrel is thrown out of the bore by the pressure of the gas behind it, that part of the gas which is pressing against the inside of the shell head merely eases off until the normal atmospheric pressure is attained, when it slowly mingles with the air.

To prove this fire a high power smokeless (so-called) cartridge in a single shot rifle and as quickly as possible open the action and effect the shell. The bore of the rifle will be found completely filled with the gas which is so charged with the unburned particles of the powder as to resemble smoke, and you cannot see through the barrel until you either wait some minutes for it to dissipate in the atmosphere or blow through the barrel to drive it out. Likewise the shell will be found filled with the same mixture of gas and particles of solid matter, or smoke.

If the theory that a vacuum were produced were true, this vacuum would at once fill up with air from the outside, which would be comparatively pure and one could see the length of the bore of the barrel without difficulty as soon as the shell was extracted.

The writer wishes to apologize for the amount of space taken up in discussing the vacuum question but pleads in mitigation that the editor, in the article referred to, alluded to and impliedly recognized its existence.

As to the condition of the shell under discussion, the cause of its being crushed is not clear from the facts at hand, but it can be safely stated that there are other facts which are not stated, and possibly not known, which, if known, would account for its condition.

## A Sure Shot

He saw a deer, blazed at it hot,  
The hasty charge went wide;  
But tho' he failed to guide the shot,  
By jinks, he shot the guide!—Puck.



# The Winchester .401 Self-Loading Rifle

By MAURICE H. DECKER

POSSESSING the distinction of being the most powerful automatic rifle made in this country, the .401 Winchester is being received with open arms by the general shooting fraternity. I have just had the pleasure of examining and firing this new rifle and my opinion regarding its merits and short comings is pretty firmly established. While it is undoubtedly a fine, strong and effective weapon, still to a few lovers of the rifle as a rifle, and not a death-dealing instrument, it will appear to possess a few features which might not be considered attractive or desirable in ones favorite arm.

With the advent of the .351 I was of the opinion that no heavier calibers could be produced in the Winchester self-loading system, for the recoil spring of this arm is in my opinion as stiff as is consistent with quick and easy loading and unloading of the chamber. The powerful .401 cartridge of course necessitates a stiffer spring and heavier breech bolt to balance its greater breech pressure and recoil, most of the weight of which occurs and is present in the forearm. My .351 I thought was about as fine a weapon of the auto type as I had ever handled, its only disadvantages being the peculiar balance and rather hard trigger pull. The new model 1910 possesses these same questionable features. The entire arm weighing some 8½ pounds seems rather heavy when compared to our other modern weapons and carries us back in mind to the less perfectly proportioned black powder arms of other days, and is one of the reasons which leads us to suspect that the Winchester self-loading system has about reached its limit in powerful calibers, although concededly a great success in the lighter calibers. The forearm of this rifle is somewhat bulky giving a great squat appearance to the arm, and the recoil spring is so stiff as to make the pushing back of the bolt by hand a rather difficult task until one learns the knack. The trigger pull of the new arm is hard and disconcerting in rapid fire, although no worse in this particular than other self functioned arms. The shape and leverage of the trigger is however, a great improvement over that of the earlier models which were not so well designed.

The recoil of the Winchester self-loaders models '07 and '10 is in my opinion practically

the same as if the breech mechanism was locked for some moments after the bullet has left the barrel. It has been my experience that the self-loading action absorbs but little of the "kick." I once fired a .351 rifle with the breech bolt wedged fast and could distinguish no difference in the recoil than when fired normally. The short barrels of these guns jump considerably and the line of sight, as in all short-barreled arms, is greatly disturbed by the recoil. After some practice and by flexing the muscles of my arms I could place two shots from my .351 within six inches of each other at some fifty feet in rapid firing, but the third invariably registered much wider. The real value of the self-operated gun lies in the fact that it leaves the mind of the shooter, in times of excitement and peril, free from all thoughts of lever or bolt and enables him to concentrate his entire energies upon resighting his weapon and pulling the trigger. I have always, and do yet for that matter, admire the short, compact and business-like appearance and proportions of the .351, but the new model .401 is to my mind not quite as symmetrical or well-balanced an arm as its mate of earlier date.

But for all the undesirable points I have enumerated the .401 rifle has *one all-redeeming feature* and this is its caliber and the cartridge it handles. I firmly believe the .401 cartridge is the most perfect one from all standpoints in existence for big game hunting. It is not by any means the most powerful when the foot pound energy tables are concerned, but it is impossible to point out any one cartridge with similar velocity and weight of bullet which in any particular equals in stopping power and striking energy the .401. I have always favored and preferred a bore of from .35 to .40 carrying a heavy bullet with reasonable velocity, high enough to insure accurate game shooting with out sight elevation up to 150 yards, to the small bore with lighter bullets developing excessive rifle racking velocities. At the time the .25, .30 and 6mm. calibers were so popular I was almost certain the next trend in cartridge development would be along the lines and of the type of the .351 in the particular of loading. At last we are getting smokeless calibers and cartridges designed originally for sporting and military purposes. The difference in loading of the .401 shell in the respect of differ



eight bullets is a wise and clever move on the makers part, to insure the popularity of the new caliber rifle. The 200 grain bullet with its high velocity will appeal to those who favor the small bore on account of its low trajectory, and the heavier 250 grain ball with its slower speed and certain knock-down properties will gratiate itself into the favor of those shooters who still have a warm place in their hearts for the large bore .40 and .45 calibers. The .401 and .351 cartridges both possess the valuable features of being the lightest in weight and cheapest in cost of all others, in proportion to their power, advantages greatly appreciated by hunters and extensive shooters of the high power rifle. The large caliber short .401 bullet will have less ill effects upon the lands of the barrel which will be consequently longer lived than those of the smaller bore high power cartridges. The bore of the model 1910 being large enough to permit the use of a wooden rod in cleaning, there will be no wear upon the sensitive muzzle of the barrel. The construct-

hands of a left handed shooter. The Remington, because of its weaker magazine spring, loads much easier and the empty shells are not thrown so far from the gun when ejected. When using the Winchester, if you are forced to fire the entire contents of magazine and chamber, upon inserting a new case, it is necessary to transfer a cartridge to the chamber by pushing back the bolt by hand which operation requires some time and effort. The recharging of the Remington auto loader is much quicker, for the bolt remaining open after the last shot, all that is necessary is to press in one or more shells and let it snap forward when the arm is ready to shoot. The magazine spring of the Winchester automatics is abnormally strong and makes charging a difficult and laborious task. Empty primed shells for these rifles being unobtainable from the cartridge makers, it is well nigh impossible to reload their ammunition, for the fired shell is thrown out with nearly the speed of a bullet some eight or ten feet away and moreover is deformed and bent



THE WINCHESTER .401 SELF-LOADER

ing of the receiver and working parts of nickel steel by the Winchester Co. will no doubt be greatly appreciated by purchasers of the .401 rifle. This feature will enable it to withstand hard knocks, and the action will be durable enough to wear out at least several barrels. The Winchester self-loading system is I think just as simple in construction and as least liable to get out of order as any of their lever repeaters. *My .351 has never given me a single bit of trouble in its performance which was not entirely the fault of the user, and has never balked or jammed once.*

I prefer the Winchester auto system to that of the Remington, mainly because of the fact that I am left handed. The Winchester is the least inconvenient of the two for me to handle, although I admire many of the salient features of the other. The smooth, easy trigger pull of the Remington and its fine balance are its most important advantages, which however do not offset the clumsy safety and inaccessible operating handle or knob in the

in at the muzzle. The cost of extra magazines for these arms seem to me to be excessive and hardly consistent with the cost of manufacture.

I would not like to trust the 20-inch barrel of either the .401 or .351 for long shots at such game as the shy antelope and elusive big-horn. The rifle itself may be sufficiently accurate at ranges of over 200 yards but the short distance between the sights make such shooting rather uncertain. With the regular open sights I have made good targets at 175 yards with the .351 and .401 and believe with a peep sight on the tang their accuracy in sighting would be materially improved, but for long shots where time is not pressing I prefer the ordinary open top sights.

For those who do not object to the weight and balance of the .401 rifle it will doubtless prove to be an efficient game getter and satisfactory in all particulars, but my advice to the prospective purchaser is to examine and handle this rifle before choosing it, for there is a possibility that a lighter arm might suit you better.



## The Lisle Revolver

PROBABLY no type of firearm however excellent in its mechanical principle or faultless in construction, has been so universally adopted and used by practical gun users, as the single barrel system with separate cartridge chambers in a revolving cylinder as exemplified by the invention of Col. Colt. Recorded history, and the existence of many truly ingenious models of revolving arms, preserved in public as well as private collections is indisputable proof that efforts had been made to produce multishot guns on the revolving principle prior to the appearance of the Colt, but owing to the mechanical difficulties encountered in mounting a system of barrels parallel with each other and rotating on a fixed spindle in a manner that would ensure accuracy, this method of construction which was popularly known as the "Pepperbox" was soon abandoned. The pepperbox revolver had little to recommend it except speed of fire, which was probably the one valid reason for its invention. Boring a series of barrels from a solid cylinder of metal did not correct the tendency of the pepperbox revolver to distribute its contents impartially, while the amount of material required to make six barrels of such caliber and length as would ensure proper combustion and a fair ballistic performance necessarily made the arm cumbersome and muzzle heavy. Notwithstanding the crudeness of the pepperbox system, it was the first real advance made in the development of the multishot, rapid fire, one hand gun, and it was singularly free from some of the faults that developed later with the change to the fixed barrel, revolving breech pistols of the Colt type. With the solid barrel made without a break or joint from nipple to muzzle there was no shaving of bullets and no leakage of gas with resultant loss of energy, as with the separate cylinder models. With the change from powder and ball to fixed metallic ammunition a last effort was made to perpetuate the pepperbox type by making the barrel stationary and causing the nose of the hammer to revolve bringing the striker opposite each barrel in turn. With this system immunity from gas leakage was retained, but the arm was still unwieldy in proportion to its length and caliber while accuracy remained constant in as many directions as there were barrels, but absolutely without regard to the line of vision as indicated by the sights. By reason of the modifications in weight and outline, and splendid accuracy secured by

adopting the one barrel and rotating cylinder system, it became possible to build beautifully balanced and symmetrical arms, and with the coming of metallic ammunition still further refinements followed as a matter of course, until the revolver as represented by the productions of American armorers was the most perfectly proportioned hand arm ever developed. Not all of the good points that make the revolver the favored arm that it is, were gained without some small loss. For pleasing lines, satisfying accuracy, and reasonable weight in our revolvers, we sacrificed nearly one-fifth of the energy developed by the cartridge; this is in itself a serious loss which coupled with a retarding effect on powder combustion in the barrel and fouling at the joint between cylinder and barrel renders the best of modern revolvers far less perfect arms than they should be. Another fault of the revolver is that to secure free rotation of the cylinder sufficient space must be left between the rear of cylinder and the recoil shoulder to accommodate shell heads of varying degrees of thickness; this space sometimes permits the setting back of soft primers under the pressure of full smokeless powder loads. When using rim-fire cartridges with thin soft copper cases the faults peculiar to the revolver are even more noticeable and troublesome; the heads of the shells will often stretch to fill the space at the rear completely, taking a permanent set into extractor cuts and other inequality of surface. In these days of rapid fire matches, snap shooting and other practical methods of training men to use the one hand gun to the best advantage, the factor of speed is of great importance and cannot be ignored. It is therefore imperative that to get the best results the arms used should be reliable and free from such faults as might cause vexatious delays or annoying interruptions in practice or in action. Until quite recently the writer was not aware that any intelligent or persistent effort had ever been made to remedy the inherent defects of the revolver; presumably it was for the reason that its numerous good qualities as an emergency arm more than compensated for the few defects which, with a single exception, were subject to contingent conditions. It is just possible, too, that the coming of the more sensational automatic type of arm was the means of temporarily diverting the attention of inventors and a more or less fickle public from the older arm. The writer is sufficient



human to acknowledge that he is one of a numerous class who thought the revolver as a type of the one hand gun had reached the limit of its development. He is still of the opinion that the arbitrary weight limit of that class of arms and the diameter of the cylinder required in man-stopping pistols, also marks the limit of its dimensions; but he is by no means sure that the only other objectionable features peculiar to the revolver type may not be wholly eliminated. I have before me as I write a most unique specimen of the revolver family, the invention of a real mechanical genius and practical gunsmith by the name of M. C. Lisle. The weapon corresponds in size and general appearance to the Co't single action army revolver, but mechanically it is unlike anything in the line of gun architecture that has ever

one that entitles it to distinction among its kind, is, that when the cylinder is locked in position for firing it is automatically aligned with the barrel so that there can be no shaving or mutilation of bullets and at the same time the joint between cylinder and barrel is tightly closed, absolutely preventing all possibility of gas leakage at that point. In devising a system of breech closure to prevent gas leakage the inventor builded better than he knew, for not only has he accomplished what he set out to do, but his system of locking the cylinder from the rear will also prevent squeezing back of soft primers or swelling of copper rim-fire shells. The trick was accomplished as follows: The forward end of each chamber is counterbored to the depth of a sixteenth of an inch and the end of the barrel is beveled to enter



THE LISLE REVOLVER. FOR SECTIONAL VIEW SEE NEXT PAGE

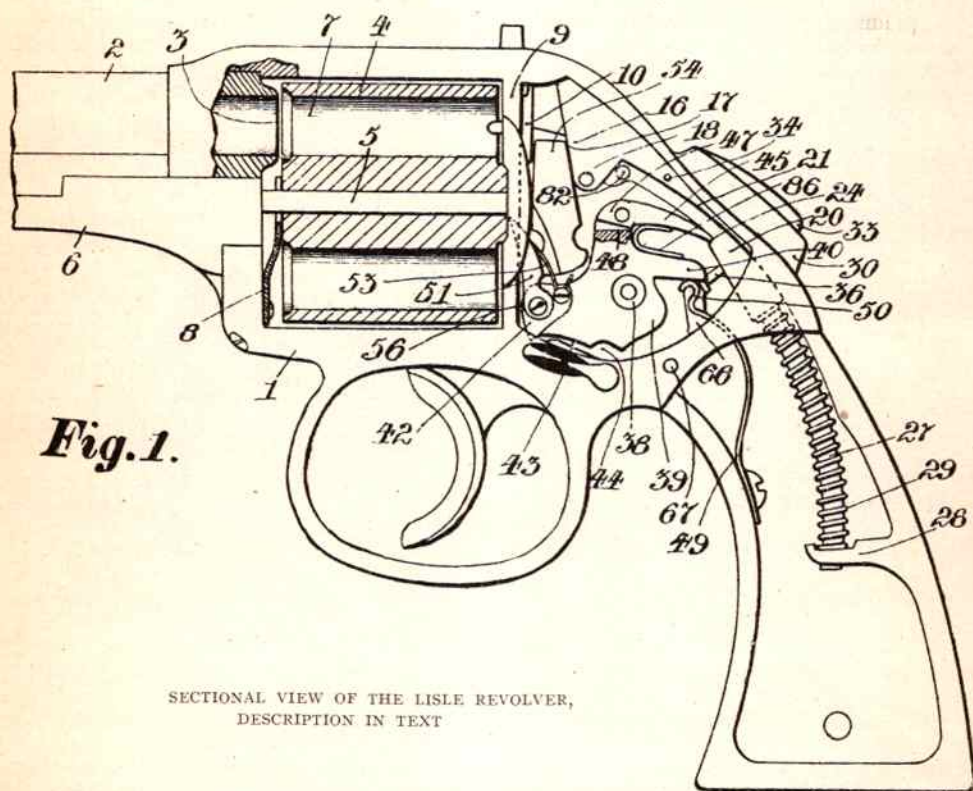
appeared in American markets or museums. A brief review of the most salient features of the new comer will prove its claim to originality of design and construction. Normally it is a double action arm but by simply shifting a small friction lever it may be instantly changed from double to single action or back to double action. It has a solid frame, with swing-out cylinder, the crone of which is pivoted well forward permitting a short swing to the left in the arc of a circle. Ejection is effected by hand, simultaneously, as with the latest models of the Colt and Smith & Wesson revolvers. The Lisle revolver has a powerful frame and is hammerless. The locking and firing mechanism is actuated entirely by the trigger. The most conspicuous feature of the Lisle gun and

and joint snugly in the counterbore. The rear of each chamber is also counterbored to permit the head of the shell to chamber flush with the rear of the cylinder. As the hand or pawl which under the strong leverage of the trigger turns the chambers to perfect alignment with the barrel, a massive steel wedge rises in the same plane and simultaneously with the pawl; this wedge forces forward a block of oil-tempered steel five-eighths of an inch square, against the cylinder completely covering the base of the shell to be fired. As the locking wedge rises into place and the square steel block is wedged into position the cylinder is thrust forward on its spindle, about one-sixteenth of an inch. When in this position and ready for firing the end of the barrel is snugly



nested into the end of the chamber forcing perfect alignment with each chamber and making gas tight joints. At the rear of the cylinder the head of the shell being chambered flush, is completely covered by the steel block before mentioned, and this in turn is locked by double steel wedges backed by a pyramid of metal on the back strap, heavier than is used in most rifles. The strain exerted by the force of explosion is direct to the rear and squarely against the locking mechanism. The arm cannot be fired until the action is locked as the nose of the striker can reach the primer only when the breech block and locking bolts are in position.

of the Lisle invention are wholly unconventional and might be criticized by some of the brethren who have become accustomed to the older models, and methods of manipulation, but there can be no differences of opinion in regard to the desirability of a gas tight cylinder and a wedge locked breech. No claim is made for beauty, symmetry or finish in this, the inventor's model. At the suggestion of friends the plans were changed during the process of construction, which accounts for some of the unsymmetrical lines above the handle. The frame was originally designed for a visible hammer and the gun could, if de-



SECTIONAL VIEW OF THE LISLE REVOLVER,  
DESCRIPTION IN TEXT

With the exception of the barrel which is a Colt New Service, and the cylinder which is of Belgian extraction, the arm was made wholly by hand and without the aid of power machinery. In testing the mechanism the regular factory .44-40-200, black and smokeless loads were used and to prove the gas conserving feature firing charges of six grains of Bullseye powder with the regular 200-grain bullet showed no sign of leakage. The sectional drawing shows the working parts and the cut from photograph give a fair idea of the outline and proportions of the weapon. Some of the features

sired, be built with either type. The limb-work consists of but few moving parts, all visible and strong with long leverages ensuring prompt and easy working of the mechanism. A careful study of several of the best models of double and single action revolvers in present use, prompts me to say that the most desirable features of Mr. Lisle's invention might without great expense be incorporated in either the visible or concealed hammer, or double or single action types, making a revolving one hand gun as perfect as we may ever hope to see it.



Figure 1 is a side view of the revolver shown partly in section with the side plate and butt plates removed, showing the relative position of the parts when the trigger is in a forward position. Referring to the drawing 1 is the frame of the revolver. 2, the barrel. 3, annular projection of the barrel. 4, the cylinder. 5, the axis of the cylinder. 6, latterly swinging bracket which supports cylinder. 7, forward end of chamber showing countersink to engage end of barrel. 8, flat spring (later a spiral) to return cylinder to rearmost position. 9, bridge of frame. 10, breech block supported in bridge. 16, standing breech forming backing for locking bolt. 17, face of standing breech showing travel of locking wedge. 18, pair of lugs on standing breech extending downward. 20 and 21, the hammer and its arc-shaped bed in the frame. 24, a bent formed in the under side of hammer to engage the sear. 26, a slot engaging end of hammer. 27, arc-shaped stem of hammer. 29, spiral hammer spring. 30, 33 and 34, not on inventor's model, discontinued. 36, a pin extending through slot

of hammer. 38, hollow stud to receive action plate screw. 39, oscillator journaled on stud. 40, lug of oscillator. 45, a sear which actuated by the oscillator cocks the hammer and compresses the hammer spring. 49, a spring fixed to the frame, extending to and engaging the rear lug of the oscillator. 51, the hand pivoted to the forward lug of the oscillator to rotate cylinder. 54, the wedge shaped locking bolt forced by cam leverage between the movable steel breech block and the standing lug on frame. Moving the cylinder forward into engagement with the end of the barrel, forms a continuous passage from the back end of the chamber to the muzzle end of the barrel, consequently the full strength of the gases developed by the powder charge exerts a propelling force against the projectile for the full length of the bore. In describing the sectional cut only the principal parts with their numerals of reference have been mentioned, to enable the reader to understand the drawings. The Lisle invention is fully protected by patents in Germany, Great Britain and the United States.

## Self-Loading Arms

### PART IV

By L. A. DANSE

#### THE STANDARD RIFLE

THIS late competitor for honors in the hunting rifle class is modeled on new lines—for a shoulder weapon. In it, the gases of powder combustion, instead of working directly back against the shell and breech block, are led through a hole in the barrel, near the muzzle, into a cylinder. In this cylinder they act on a piston, which transmits their energy to the breech mechanism, to function the action. This method of utilizing the energy is termed "gas operated." These guns are also distinguished by the auxiliary operating mechanism, the old trombone or sliding fore-end, which is successfully applied for the handling of large, high-power cartridges, in the Standard. The magazine is of the staggered column box type, but is filled by a method new in American arms. The floor of magazine has attached to it the spring and follower, all of which swing on a hinge. By pressing a catch, the floor or cover swings open, with it the follower, allowing shells to be dropped in. The Standard, like the Remington, is made

to handle several sizes of shells; the actions being similar, only detail changes being made to suit the various calibers. It uses the same ammunition, viz., .35, .30 and .25 Remington.

To describe this rifle, the receiver, barrel, bolt, etc., will be taken first, then the frame, lock and magazine.

The receiver is machined out to form a cover for the frame and lock parts. Along its bottom it is fitted to the frame by a sort of tongue and groove arrangement. At the rear end, a lug is cut, which engages a notch in the frame, just ahead of upper tang. The front of this lug is held by the take down lock. The top of the receiver, inside, forms a guide for the bolt. About the middle is cut a shoulder, against which the locking bar holds. In front of this shoulder is a port, in the top of receiver, for ejection of shells. The barrel is permanently screwed into the front of receiver. Over the barrel is a longitudinal dovetail slot in which is the rear sight. Below the barrel is a lug into which the cushion plug is screwed. The back end of this plug is formed into a



tapered dowel, which engages a corresponding hole in front of frame, to hold parts of gun together. Alongside the cushion plug are slots in which the connecting rods work. These connecting rods have, at their rear ends, extensions formed on them, in which are holes to engage the cocking pin, in bolt. In the right connecting rod is a hole into which the hold-back button latches. This hold-back button and its spring are set in the right side of the receiver near the back end. The front ends of the connecting rods engage the cross head, in the action handle tube. This cross-head has, in its rear end, a hole which fits over the cushion plug, in action, acting as an air buffer for the recoiling parts. In the bottom of cross-head is a notch, into which the action handle lever hooks, when working the action by hand. The piston rod screws into the front of cross-head and passes through the spring abutment on barrel into the gas tube. Surrounding the rear end of gas tube and the cross-head, cushion plug, etc., is the action handle tube on which slides the action handle. In the action handle is a lever and spring which latch the action handle to the spring abutment when idle and to the cross-head when operating action by hand. The action handle tube rests against the front of the receiver at rear end and front end is held, by the front tube end, to the gas tube. On the front end of piston rod is the piston. The action spring exerts



THE STANDARD RIFLE TAKEN DOWN

its pressure between the back of the piston and the seat in the spring abutment on barrel. In the bottom of gas tube, midway between front end of action handle tube and gas inlet, is a small hole which acts as a vent for the gas when the piston is forced back in gas tube at discharge. The front end of gas tube is screwed into the gas inlet, in which are ports and a gas inlet valve. When this valve is turned, it adjusts the amount of gas admitted to gas tube, regulating action. When valve is turned off, it shuts off all gas from barrel and opens a vent from gas tube to the air, so piston in tube will not retard manipulation of action by hand. The gas inlet is fastened to the barrel by a small set screw, which enters a hole in top of

barrel. This gas inlet screw is held in place by the gas inlet screw plate, which dovetails in above it. The front sight is set in a slot in top of gas inlet.

The breech bolt, which slides along inside top of receiver, has on its front end, the recoil face, which holds shell in chamber of barrel. At top of bolt, above recoil face, is pinned the extractor with its spring. In sides of bolt just back of the extractor and recoil face are notches in which the hinge of locking bar works. In sides of this locking bar are cam slots which impart the locking and unlocking motion—raises rear end of locking bar into engagement with shoulder in top of receiver, or lowers it flush with top of bolt. Through bolt is a cross slot in which is the cocking pin, which cams the locking bar and cocks the firing pin. The firing pin seats in a fore and aft hole through the bolt. In the rear end of firing pin is a hole in which is the front end of the main spring. About the middle of the firing pin is a shoulder which bears against the cocking pin, in cocking. The rear end of the main spring engages a guide pin and seat in the main spring bushing. This main spring bushing is seated in rear end of bolt and held in place by main spring bushing pin, which projects down from top of bolt. On the bottom of the firing pin is a small lug which acts as a cock notch, engaging the nose of sear to hold firing pin back. This lug on firing pin works in a slot in bottom of bolt. Along bottom of bolt from front to rear is a groove which slides over the ejector. In back end of bolt are small springs which act as buffers between bolt and receiver.

The frame is integral with the magazine, trigger guard and tangs. The tangs are formed on the back end of frame and hold the butt stock by means of the tang screw. The top of frame is finished to form a runway on which the bolt slides, in action. Inside the frame, at rear end is pinned the take down lock and its spring. Through bottom of frame, between trigger guard and lower tang is a hole, through which the take down lock is operated. The trigger and safety set in and above the trigger guard. The trigger has a forward projecting arm, at the end of which is swung the trigger pawl. This trigger pawl engages the heel of sear when action is closed, but when action is opened, a hump on top of pawl is pushed back by the bolt, disconnecting pawl from sear. The trigger spring is set on a pin above front bow of trigger guard. The pawl spring exerts its tension between the arm of trigger and an arm at bottom of pawl. The safety has a small handle in top of trigger guard and slides fore and aft on top of trigger guard (bottom of frame) to block sear heel or unlock it. The sear is swung on a pin just



back of the rear wall of the magazine. At back of sear, on top, is the nose which engages the firing pin lug and below the nose is the heel which engages the trigger pawl and safety. The sear spring sets in a hole in bottom of sear. In bottom of frame under trigger pawl and sear, is the magazine cover catch and its spring. There is a small handle, on magazine cover catch, which extends out through bottom of frame. The ejector is fastened in the top of rear wall of magazine.

The magazine has its sides formed into lips at top to hold the top cartridge from passing straight up, but to allow it to slide forward, and of magazine into chamber. The front

above the cover plate hinge is a lug on the front end of frame, which engages the dowel pin of cushion plug. Along the sides of frame are flanges, in which are grooves to correspond with tongues on bottom of receiver walls, holding receiver and frame in alignment.

To take rifle down, be sure rifle is unloaded, insert round end of take down tool in hole back of trigger guard, press take down lock and draw receiver forward from frame.

To put together, insert front end of frame into front end of receiver, so dowels will engage properly, press top of rear end of receiver down (in front of lug on frame) against take down locks until tongues on receiver walls



THE STANDARD RIFLE (OUTLINE)

Length of barrel, 223 in.; length of rifle, over all 42 in.; weight of rifle, 74 lbs.; capacity of magazine, .35 cal., 4 shells; .25 and .30 cal. 5 shells; with one in chamber, .35 cal., 5 shots; .25 and .30 cal., 6 shots. Type action—gas operated, locked breech, stationary barrel; auxiliary, trombone, hand operated. Type magazine—staggered column box, integral with frame, loads from bottom, hinged floor plate. Sights—regular, Lyman ivory tipped hunting front set in block; sporting rear dovetailed to receiver. Special, rear tang sights and various front sights to dovetail. Finish—blued. Stocks—butt of Circassian walnut, 13½ in., bronze butt plate; bronze action slide. Price, list \$37.50, net apprx. \$35.00.

There are various special grades of finish and other extras, such as special stocks, etc., which may be had at an additional cost.

Ballistics, .35 caliber.—(Remington rimless, smokeless cartridges). Diameter of bullet, .358 in.; diameter of head of shell, .422 in.; length of bullet, .910 in.; length of cartridge complete, 2.525 in.; weight of bullet, 200 grs.; weight of powder, 32.5 grs.; weight of cartridge, 405 grs. Type of bullet—soft point or full jacket; kind of powder, L. & R. Lightning; muzzle velocity, 2000 ft. sec.; muzzle energy, 1776 ft. lbs. Penetration—soft point, 13 ¼-in. pine boards; full jacket, 32 ¼-in. pine boards. Accurate range, 500 to 700 yds. Remaining velocity at 500 yds., 1645 ft. sec.; remaining energy at 500 yds., 1202 ft. lbs. Trajectory—200 yds. range, height at 100 yds., 5.40 in.; 300 yds. range, height at 150 yds., 16.60 in.; 400 yds. range,

height at 200 yds., 36.40; 500 yds. range, height at 250 yds., 65.58 in.

Ballistics, .30 caliber.—Diameter of bullet, .306 in.; diameter of head of shell, .422 in.; length of bullet, .980 in.; length of cartridge complete, 2.525 in.; weight of bullet, 170 grs.; weight of powder, 24 grs.; weight of cartridge complete, 310 grs. Type of bullet—either soft point or full jacket. Kind of powder, L. & R. Lightning. Muzzle velocity, 2020 ft. sec.; muzzle energy, 1540 ft. lbs. Penetration—11 ¼-in. pine boards; full jacket, 42 ¼-in. pine boards. Accurate range, 500 to 700 yds. Remaining velocity at 500 yds., 1580 ft. sec.; remaining energy at 500 yds., 943 ft. lbs. Trajectory—200 yds. range, height at 100 yds., 5.74 in.; 300 yds. range, height at 150 yds., 15.21 in.; 400 yds. range, height at 200 yds., 31.56 in.; 500 yds. range, height at 250 yds., 57.12 in. Ballistics, .25 caliber.—Diameter bullet, .257 in.; diameter of head of shell, .460 in.; length of bullet, .963 in.; length of cartridge complete, 2.525 in. weight of bullet, 117 grs.; weight of powder, 23 grs.; weight of cartridge complete, 265 grs. Type bullet—either soft point or full jacket. Kind of powder, L. & R. Lightning. Muzzle velocity, 2127 ft. sec.; muzzle energy, 1175 ft. lbs. Penetration—soft point, 11 ¼-in. pine boards; full jacket, 44 ¼-in. pine boards. Accurate range, 500 to 700 yds. Remaining velocity at 500 yds., 1650 ft. sec.; remaining energy at 500 yds., 707 ft. lbs. Trajectory—200 yds. range, height at 100 yds., 4.95 in.; 300 yds. range, height at 150 yds., 13.77 in.; 400 yds. range, height at 200 yds., 28.12 in.; 500 yds. range, height at 250 yds., 54.51 in.

wall of magazine is beveled, at top, to form a ramp to guide shells into chamber. The bottom of magazine is closed by a cover which is hinged at the front and held by the magazine cover catch at rear end. The magazine follower is swung on the cover hinge pin. It has, at its rear end, the tray, or carrier, which is swung on a pin and has its front end pressed up by a spring on the follower. The magazine spring is spiral and is wrapped around follower hub. One end is hooked over a lug on follower hub and the other end presses against the cover plate. When the cover plate is opened, it strikes this spring lug on follower hub and swings follower and carrier out, so cartridges may be placed in magazine. Just

enter grooves in frame flanges and slide receiver back into place, so take down lock snaps fast. This should be carefully done, to avoid burring edges of receiver or frame. The bolt should be closed and locked and the firing pin down when taking down or putting together.

If action handle is moved while rifle is taken down, the bolt and the connecting rods will be misplaced and possibly injured, which misplacement is shown by the connecting rods projecting beyond the receiver walls. To replace bolt, pull action handle gently back until firing pin spring is compressed and hold handle there. Press bolt into receiver and slowly move it forward until seated.

To load the rifle, release safety, release



magazine cover catch, open magazine and drop cartridges into magazine bullets forward. Close magazine cover, turn rifle right side up, press button in bottom of action handle and work handle *jully* back and forward. This loads the chamber and cocks the firing pin. To replace shell fed from magazine to chamber, set safety, open magazine, drop shell in and close magazine cover. This leaves the arm fully charged.

To unload the rifle, open magazine and drop cartridges out, release safety, press button in action handle and work handle once to eject shell from chamber.

To uncock firing pin, leaving chamber and magazine loaded, pull back action handle about one inch (until locking bar is unlocked), pull trigger and move handle forward.

The action in firing is as follows: The arm being loaded and cocked, the safety is released and the trigger is pulled. The trigger pawl pulls sear down and allows firing pin to detonate primer. The bolt remains locked to the barrel during the ensuing discharge, until the bullet passes the gas port in barrel at gas inlet. The powder gases pass through this port into the gas tube and press back on the piston. Piston goes back against pressure of action spring and firing pin spring, pushing cross-head and connecting rods, which slide cocking pin back in bolt slot, camming and unlocking locking bar and cocking firing pin. The bolt is carried back taking with it the empty shell in grasp of the extractor hook. (The bullet has left the barrel before the breech is unlocked). As bolt goes back it pushes trigger pawl out of engagement with sear and the ejector kicks the empty shell out through port in top of re-

ceiver. As bolt reaches rearward limit of travel top shell in magazine rises slightly, in front of bolt.

Force of gas pressure being spent, action spring starts piston forward, drawing with it the cross-head, connecting rods and bolt, which pushes top cartridge from magazine into chamber. As bolt reaches closed position, cocking pin goes forward with connecting rods, leaving firing pin held by sear and camming locking bar up into locked position, when piston is forward and action ready for repeated firing as trigger is released and pulled again (once for each shot).

The following directions for dismounting are copied from the Standard handbook. Remove gas inlet screw plate and gas inlet screw. Force gas inlet and gas tube forward off the barrel. Unscrew the piston rod from the cross-head (inserting screw driver in slot in piston) holding piston against action spring pressure. Remove piston and action spring. Pull action handle slide-tube and tube-end forward and over the spring abutment. Take down frame from receiver and lift breech bolt, connecting rods and cross-head from the receiver.

Insert point of knife blade under head of main spring bushing pin and pry out pin. Firing pin, main spring and bushing will spring out. Push cocking pin forward in slots and out of bolt, when locking bar can be removed.

Force out four pins on side of frame and trigger and sear mechanism will drop out.

Assemble in reverse order. Be careful to have the index marks on under side of barrel and gas inlet coincide so gas inlet screw can be properly replaced.

[TO BE CONTINUED]

See page 481

## The Automatic Question

THE Gun Department is in receipt of the following letter from Mr. C. G. Williams of Shenandoah, Ia., relative to the prohibition of automatic guns:

"I see so much in the different sporting magazines regarding legislation against the automatic or auto-loading rifles and shotguns that I really want to cuss some men for the density of their brains. It really does not matter what kind of a gun a man owns, from a single barrel, single shot, to the auto-loading, for if he is a game hog he will get game and if

he does not want to see game spoil he will only come in with what he can use. I never used or owned a single shot, but of double barrel, muzzle loading or breech loading I have used my share, also of pump guns. I now own a Remington autoloading shotgun, a 12 gauge Ithaca and two 20 gauge Ithacas, also a stock of rifles—but will not speak of the latter at present. From my own experience, either at the trap or in the field, I can do as good work with the auto-loading as anything else, also can do as much execution with the 20 gauge as with a



10 gauge. I would not sell any of my guns, so this is not a kick against them or a bid to sell. I have shot more game in the last four years with my double guns than with the auto-loading and more with the 20 gauge than with the 12 gauge. I have hunted with men who shot pump guns, auto-loading and other loading and no man will get more game with one gun than another, if he is a conscientious sportsman. In my whole life, taking all in all, I shot more ducks in one week, for the market, up on the Wapsiepincon, than I would now want to own up to, and did it with an old muzzle loader. I have hunted on the Cheyenne Bottoms east of Hoisington, Kansas, the great duck hunting territory of that state, and I saw a boy with a single "Iver Johnson" carry off thirty ducks when the limit of the law for a day was twenty. I am of the opinion that the greatest foes of wild game in this country are the rich men's hunting clubs on our great natural waterways. Take one point for instance. At Bath, Illinois, out in the Illinois River, is an island about eight miles long, I should judge, as I have pulled a boat around it and rode around it in a motor boat. It is owned by the members of a hunting club some of whom live in Chicago and some in Springfield, Illinois. These members will come to the island, where they have a large club house, and as the Illinois River is usually high in the spring, they will hire some of the men and boys of Bath to paddle, push or pole their boats around through the woods for them, also these men or boys *must* bring guns with them, but they are never allowed to shoot even once while out. The reason for the above is that Mr. Richman can shoot his limit of 20 ducks, then go ahead and shoot his guide's limit of 20 more, making 40 ducks for one man in one day. The game wardens of Havanah, Illinois, are aware of this practice but say that "they can't catch them, for the guides are earning from \$2.50 to \$3.00 per day and will swear like a trust magnate that they shot half of the game, just to hold their jobs. I know positively from personal observation, as seeing is believing, that the same thing happens in Wisconsin, Iowa, Minnesota, Missouri, Arkansas, Nebraska, Oklahoma, New Mexico and Colorado. I have seen from 500 to 1000 dead ducks on the shores and floating on the water of some of the big irrigation reservoirs in Colorado and the game wardens say, "if you can show me (or convince me against my will) that there are any violations of the law going on, we will look it up." But Mr. Poorman can't go out, kill 20 ducks, come home and sell 10 of them to help make up for the money spent and the time lost while on that hunt. I would much rather see the limit put down to 12 ducks a day and see the laws read so a man could sell those than to have the right to shoot 50 and not sell

one. There is no use kicking about the gun a man uses, kick the man, not the gun, and you will hit the right one and save a whole lot of game. I am not writing this because I am sore, for I probably get more hunting than 99 out of every 100, that goes hunting, and I earn enough so I can afford it, but I try to think about the poor laborer who earns only \$1.50 to \$2.50 per day, yet he would get out once in a while if he could make up all or part of that \$2.50 or whatever he earns by selling some of the game he gets. Also there are some people in our cities who never tasted duck or goose. I know mechanics earning good wages, whose children never saw a duck or tasted one, and they live in Philadelphia, Chicago, St. Louis and a whole lot of our smaller cities. Let them get a taste. Put the limit down, put the penalty up, but let them sell part of what they get. The editor of this magazine is a bigger fool than I think if he will concern with the advocates of "no sale" of ducks and geese. Let the children and older people get a taste. They will be the ones in a few years who will perhaps be buying the guns and the sporting magazines."

The Editor of this department heartily endorses the position taken by Mr. Williams in regard to the type of guns used by hunters on game birds. Written game laws as well as the unwritten ethics of sane sportsmanship, may alike be violated with a single barrel muzzle-loading flint lock shotgun, as readily as with the latest type of automatic multishot self-loader, but it would be strange logic that would indict the innocent, inanimate appliance used in breaking the law and permit the real criminal, the man behind the gun, endowed with the power of reasoning to go free. Our beautiful passenger pigeon, once the most numerous of all American game birds has long since disappeared, largely through the agency of market hunters and their nets, but no sane person would suggest holding the nets employed in the capture of the game responsible for the wanton inexcusable slaughter. The responsibility for violation of game laws should not be chargeable to the type or gauge of gun used but to the type and gauge of the man using them. The deplorable conditions of game law evasion and violation as described by Mr. Williams in the states named, certainly does exist and if we would save the pitiful remnant of our wild fowl from total extermination we must at once strengthen our game laws where they are weak and provide a penalty to fit the crime in every case of violation. The writer believes that all law should be based on the principle of the greatest good to the greatest number, for this reason, and for the reason that state laws have proved ineffective. He is of the opinion that all laws in any way affecting game protection should be national instead of state. Will



game is the property of "all the people all the time;" the mere fact that migratory game may rest temporarily in a particular locality does not give any class of men a property right in the game. This applies with equal force to the market hunter and the equally greedy game hog of the exclusive hunting club. To prevent extermination of game will require the enactment, and rigid enforcement of federal laws, with adequate penalties for each and every violation. A nominal fine is not sufficient to deter the wealthy club man from doubling the legal limit of his bag, nor will it stop the market hunter when he may easily pay his fine from the proceeds of a day's hunt. The vigor with which the imprisonment clause has been fought by wealthy violators of the anti-trust laws, and the farce of imposing fines on law breakers having unlimited incomes derived from the source of their crimes, clearly points a remedy for some of the worst features of game slaughter. Spring shooting, the market hunter and the cold storage plant are responsible for the destruction of more game than all other causes combined. We cannot logically approve of any hunting club or organization that will monopolize the natural haunts of wild fowl, protecting it only until such times as the members have leisure to vie with each other in their efforts for a record bag. We are of the opinion, that all game preserves should be under immediate federal supervision, with an open season whose length would be determined by the an-

nual report of a national game commission. During the open season the bag might be limited but the shooting should be free, alike to the man of wealth and the wage earner. We do not believe that the day's sport should be measured in dollars and cents or by the number killed, nor do we think that the ethics of the man earning \$2.50 per day differs materially from those of his wealthier neighbor. Given an opportunity to sell his game in open market, the persecuted \$2.50 per day man would be sorely tempted to prolong his hunting trip indefinitely, if he could double the salary earned at his regular employment by selling the game. In most states the law is extremely liberal in regard to the legal limit of the bag for a day's shooting, and for the total number of birds that may fall to one gun during the open season. The allowance is fully as large as it should be if the sale of game were permitted. Sportsmen as a rule are, or in the nature things ought to be, men of generous impulses, and in the absence of a law forbidding it, could share the contents of their game sack with deserving friends who from causes beyond their control are disbarred from the pleasures of the hunt. The caterer who buys game in the open market, and his patrons who consume it at so much per plate have no sentiment in regard to game or its conservation and with the man who is too indolent and spiritless to devote a day to dog and gun, should not be considered in the scheme for the preservation of game. "Them's my sentiments."

## The Midwinter Handicap

By H. L. JILLSON

PLANNED on new and the most approved lines, the fourth annual Midwinter Handicap trap shooting tournament promises to be the "biggest and best" in the history of these contests which are fast building a reputation for Pinehurst which ranks with its international golfing fame. In addition the management expresses its appreciation of the interest shown by a liberal increase in "added money" which makes the sum over \$1000.00 when the trophies offered in connection are considered; A "classic" American shoot in every meaning of the word. "Send me a program" is the request from all quarters and from men who figure in national meetings of importance—winners everywhere—the country's best. The special innovation is the adoption of the "Squior moneyback" plan

which is in such universal favor among high class amateurs. The regular sweepstakes will include ten regular twenty-target events on the first and second days, and five regular twenty-target events on the morning of the third and fourth days. Moneys in all these events will be divided according to the Rose system, 8-5-3-2-1. There will be an optional sweepstake with a \$2.00 entrance, in every twenty and twenty-five target event on the program. The purse of these optional sweeps will be divided on the percentage system, class shooting, 40-30-20-10, if over twenty entries; otherwise 50-30-20. There will also be an optional sweep of \$2.00 entrance on each the first and second hundred of the first and second day's program and in the first hundred of the third and fourth



day's program. Division of moneys by high guns.

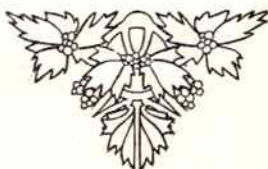
The Preliminary will be one hundred targets, unknown angles, with the handicaps ranging from sixteen to twenty-three yards, high guns. The added money will be \$150.00 the number of moneys into which the purse will be divided to be determined by the number of entries. The entrance fee of \$10.00 includes targets. The Handicap is arranged on the same plan as the Preliminary, the entrance fee \$20.00. The trophies include splendid sterling cups to the winners of both the Handicap and the Preliminary, a high average gold medal to the leader in the regular sixteen yard events (600 targets), silver medals for second and third and a gold medal for the leader in the entire program of eight hundred targets. The professionals will shoot for a trophy to be awarded for the high average in the sixteen-yard events, contesting otherwise, only for the price of targets, and being handicapped on the same basis as the amateurs. The Pinehurst Gun Club will positively add \$500.00 (and if there are fifty entries \$400.00, and for every ten entries above fifty an additional \$50.00 to be divided pro rata among the amateurs who shoot in all regular events (the two handicaps not included) scheduled for the four days of the tournament, and fail to win the amount of their entrance money in these events. In no case, however, will more than the total amount of this entrance money (less price of targets) be paid a contestant.

An extra entrance fee of \$1.00 per day will be charged each amateur who shoots in one or more events any day. This \$1.00 per day plus the "added money," will be divided pro rata among the amateurs. For example, if seventy-five contestants shoot each day in one or more regular events, the "added money" would at least be \$500.0 and with the \$1.00 per day which is charged each contestant, there would be a grand total of \$800.00 for the four days, which would be divided pro rata among the amateurs who shoot in all the regular scheduled events and fail to win the amount of their entrance

money. It must be remembered, however, that no contestant will be paid more than the total amount of his entrance money, less the price of targets.

It is confidently believed that this purse will amount to a sum sufficient to cover the losses of those who shoot in all regular events, based on an entrance fee of \$64.00 for the four days, less the price of targets (\$12.00). Thus a contestant can compete in all regular events of the tournament, and should he prove to be out of form and not shoot up to expectations, his four days sport would cost him the price of targets only.

While contestants are not guaranteed the total amount of their entrance money, it is reasonable to believe that they will receive it, as statistical data in connection with tournaments conducted under this system, shows that this purse in each instance was sufficient to cover the losses of those who shot in all scheduled events, and frequently there has been quite a surplus. In case of a surplus after the combined losses have been paid, it will be divided among the high gun amateurs who have shot in all regular scheduled events which briefly summarized, creates three places for each \$50.00 or fraction thereof, up to \$500.00. While dates are set for Wednesday, Thursday, Friday and Saturday, January 18, 19, 20 and 21, the Preliminary and Handicap on the closing days, the event will round out the full week, many shooters assembling as early as the week previous. Other events on the season's schedule include hundred-target handicap tournaments for sterling cups to be held weekly from January 30 to March 27, inclusive. For the four best scores made in these events, the winner to have shot at not less than eight hundred targets, a gold medal will be awarded. In addition the program will include numerous invitation shoots for contributed cups and on the firing line throughout the season, will be found those who have assembled here annually for many years; a group in which good fellowship reigns supreme.





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## Answers to Correspondents

### DEPRECATES PERSONALITIES

EDITOR GUN DEPARTMENT: So long as no good can possibly come from the free and indiscriminate use of personalities in articles relating to guns and gunning, wouldn't it be a good plan to stop the practice so far as one magazine is concerned? And isn't the surest way to stop the publication of articles teeming with personalities—articles in every other way very excellent and interesting—to throw them into the waste basket, or to return them to the writers for revision? Is it not just a little inconsistent to publish some of the letters appearing in the Gun Department beneath the statement that “under no circumstances will personalities ever be permitted?” Or have I the wrong idea of the definition of “personalities?”. I find it quite impracticable to try to live in camp without the “Outer's Book,” and as I am in camp twelve months of the year, you can form an estimate of my opinion of the magazine. It seems to fill the bill as does no other paper with which I am acquainted, because it tells the things I want to know about guns and what may be expected of them; but all the time I cannot help wishing that those worthy gentlemen who seem to have such a well developed grouch at each other, might retire to some lonely spot with their favorite rifles, be they either bolt or lever action, and if either lived to write of it, we might believe that he had the better gun. And should any other, who may have been led to invest good American dollars in a foreign gun catalog feel so inclined, he might also appear upon the scene with an auto-loading rifle, and “have at” the base villain who persuaded him to jar loose from his hard earned coin. Thus might these personal questions be settled and the public be relieved from reading page after page bristling with evidences of bitter jealousy.

Cannot the gun question be discussed in a gentlemanly manner? Or must those most conversant with the performances of firearms descend to the schoolboy and back-alley methods of condemning each other by name, because their ideas do not coincide?

The most of us desire to be informed concerning guns; and none but the few taking part in a controversy cares a hang what one's opinion of another is, so long as he keeps it to himself.

If a man can kill a running jack-rabbit at three hundred and fifty yards with a bullet from .22 short cartridge we are glad to hear of it, and

to know his name; for it is a name worth remembering in connection with a noteworthy feat; and if another can kill an antelope at each alternate shot at whatever the distance may happen to have been, he has reason to be proud; and it seems to me that those of us who have not been able to duplicate these shots should get busy and practice thirty or forty years at least, before nominating these experts for high honors in the Annanias club.

Because contributors persist in including undesirable references in their communications is no reason why a long-suffering public should be burdened with the personal woes of a few jealous souls.

Let us have peace even though we must fight for it. Yours truly,

ORRIN E. STANLEY.

[Judging from some of the letters received by the gun department of late, the sentiments as expressed by Mr. Stanley will find ready endorsement by many of our readers. It is possible that we have not edited some of the manuscript submitted, as closely as would be consistent with our rule governing the use of personalities. It has been our policy to allow contributors a free hand in the handling of controversial subjects, trusting to their good judgment to keep well within the rules of debate. It may be true that the language sometimes chosen to construct a telling sentence might be slightly modified, but we believe most of our able contributors, however sharp their exchanges, are close personal friends. The genuine gun crank is ever a forceful man and a man of strong convictions, otherwise his surplus energy might be expended at Ping pong or tiddledy winks. It is barely possible, however, that the contest of wits is more interesting to the principals than instructive to the audience. In any event we believe that the purpose of a first class gun and ammunition department and the interests of most of our readers may best be served by eliminating, so far as possible, all personal allusions of an uncomplimentary nature, and it has been our aim to keep our pages free from them, but we have some difficulties to content with, as is illustrated by a recent incident. Knowing a certain critic to be a very warm friend of the writer he was lampooning, and taking his comments to be good natured pleasantries, we printed his letter.



## Gun and Ammunition Department

Immediately there was a loud protest, not from the gentleman attacked, but from others on his side of the controversy, who took the comments seriously and charged us with violating our rule, being unfair, partial, etc. It is not easy to tell where to draw the line.—R. A. K.]

### A SUGGESTED COMPARISON

EDITOR GUN DEPARTMENT: I have read with interest the articles in the gun and ammunition department by and concerning the shooting of the Topperweins, particularly the revolver shooting of Mr. Topperwein, and I feel moved to ask that you publish the best scores made by Mr. Topperwein on the Standard American target at the ranges of 20 and 50 yards, these being the standard ranges, and for comparison publish the twenty best scores made in the last match of the United States Revolver Association.

If by any means in reply to this you should state that Mr. Topperwein does not shoot on the Standard American target at the 20 and 50 yard ranges I wish you would state why he does not do so in order that his skill may be compared with that of other marksmen.

The Standard American target at the twenty yard and fifty-yard ranges constitutes the recognized test of marksmanship with pistol and revolver and a test of Mr. Topperwein's skill under these circumstances would enable us to give him exactly the credit which is his due, since if he is really an expert revolver shot he will have no difficulty in shooting into the bullseye of a target over a measured range as well as performing some of the feats which we see advertised. Yours truly,

CHAS. NEWTON.

[I feel that it would be as unfair to ask Mr. Topperwein to match his skill as a pistol shot at flying objects, against the skill of a man equally expert with the pistol, but who shoots at stationary targets only, as it would to ask the latter to duplicate some of Mr. Topperwein's truly marvelous stunts. I do not know whether Mr. Topperwein practices regularly at the distances specified on the Standard American target. If he does not, I presume it is for the same reason that the members of the United States Revolver Association do not practice Mr. Topperwein's style of shooting. If you had suggested a comparison of the results of a mixed programme, in which each style of shooting and each exponent of his particular style would be represented by an equal number of shots, I am of the opinion that Mr. Topperwein's score would not suffer much by comparison.

I cannot quite accept, without challenge, your statement that "the Standard American target at the 20 and 50-yard ranges constitutes

the recognized test of marksmanship with pistol and revolver." To me it would seem that the methods of pistol and revolver shooting, as at present conducted, is more in the nature of a test of the perfection of arms and ammunition, the refinements of sights and lock mechanism, and an excellent training in patience for the marksman and spectators. The specified distance and fixed paper target are excellent appliances for the beginner, but no one may hope to become a skillful pistol or revolver shot within the natural, unlimited field, of these fascinating arms, who limits his practice to stationary targets only.

The one hand gun owes its existence at the present time to its portability, compactness and mobility, all of which contribute to the facility with which it can be trained in any direction. This in itself is suggestive of its mission as a firearm and in no way relegates it to the Schuetzen department of one hand gun users. The military authorities evidently do not share your views in regard to what constitutes a test of practical marksmanship with the revolver, as the trooper's figure of merit is based on his performance at quick fire, timed fire and fire at moving and disappearing targets, as well as at fixed targets and ranges. If the ultimate object of pistol shooting were merely to punch holes in a sheet of paper for pastime, Mr. Topperwein would soon find his occupation gone, as his is not the better method for that purpose. When, however, the object is to acquire an intimate knowledge of the possibilities and the complete mastery of the short gun for offense and defense, my own experience prompts me to say that the target shooter's method leave much to be desired. Assuming that Mr. Topperwein has specialized in his line, and has never practiced under the United States Revolver Association's methods or rules, I cannot see how, to do so, would affect his standing as a revolver shot in his own line, even if he should make a poor showing at the Standard American. I do not understand why the Standard American target at 20 and 50 yards should be made the arbitrary test of any man's skill with a six-shooter, when that style of shooting is but one of the many that may be practiced, and considering the nature and purpose of the arm, it is the least practical of any that has yet been devised to bring out the latent possibilities of both marksman and weapon.

The Schuetzen method of our German brethren would never make a rifleman as the term is understood, and the most helpless thing imaginable, on a game trail, is the man who has practiced with his rifle at fixed targets exclusively, trying to keep his score safely in the 90's. To give each class of shooters the credit which is their due, I would suggest that a specified number of shots in each department of pistol



shooting be made a condition of the test and let the best man win. In this I would not include freak shooting, or shooting that would require a competitor to become a contortionist or to assume a strained or undignified position; but only such pistol work as a man would be called on to do in the various emergencies, which in the lives of the civil officer, the soldier, the citizen and the sportsman, makes the one hand gun the favored weapon.

The United States Revolver Association has done much to popularize the sport of pistol shooting, but not more than such able exponents of the art as, The Topperweins and Captain Hardy. I appreciate your desire for knowledge as to the comparative skill of amateur and professional pistol shots, but if such a comparison is to be made, it should be conclusive. To compare scores shot on different days under varying conditions would decide nothing. Most of the Topperweins' shooting is done out in the open, under such weather conditions as may prevail at the time. I am not sure that many of the world-beating 20 and 50-yard records are made under similar conditions. A world's record should mean something definite, not merely a person's ability to put a specified number of shots in a circle of given diameter under the most favorable conditions. I believe Mr. Topperwein to be without an equal in his line and it is but fair to him to say that his conception of what should constitute a champion is such that he persistently refuses to permit the title to be used in connection with his name.—R. A. K.]

### WANTS A ROUND BARREL

EDITOR GUN DEPARTMENT: I am a reader of your book and can say it comes next to the "Good Big Book" with me, but I doubt that any of the boys in Moses' time could have appreciated an Outer's Book for it might have put the blink on that Jonah story and all about that big whale in comparison to the big ones that get away nowadays. Well, sir, all fooling aside, it's a question I want to ask and if you can answer it, which no doubt you can, you will help to satisfy the minds of a few men who shoot a little with .22 caliber rifles. The question is:—Why don't the Winchester people make a .22 W. R. F. rifle with a round barrel? They make a .25-20 and also a .22 in the cheaper grade but no .22 W. R. F. Say! do you know that a .22 W. R. F. Winchester rifle and that a new .22 W. R. F. Colt revolver are the two guns that put more sport into the shooting game for me than any other combination you can mention? The Winchester people ought to be urged to put on the round barrel in this caliber. It's neater, won't shine up on the edges, besides the expansion is more uniform when its barrel

becomes hot from rapid shooting. I shoot their .25-20 considerable and heating of the barrel don't make any difference, but in my .22 it does and I lay it to the octagon barrel. I would like to hear from other shooters through your paper. In the meantime I will pray for that round barrel and the rest of the brothers who shoot and like it know why that hunk of iron can't be made round instead of about six cornered. Very truly yours,

E. F. S.

P. S.—I am a Badger too, BY GOSH!!

[We cannot say definitely why the Winchester Model 1890 is made with octagon barrel only, while the Model 1906, almost identical except in weight and dimensions, is made with a round barrel. The Model 1890 with 24-inch octagon barrel weighs from 5½ to 6 pounds according to the density of the wood; this is somewhat heavier than the same arm would be with a round barrel of equal length, and is a desirable weight for the expert and snap shot, a class of shooters with whom the arm is a great favorite. The octagon barrel was formerly the choice of most riflemen and is still preferred by many on account of its conceded beauty. This is probably one of the reasons for its original adoption. To change to a round barrel would involve some expense for new milling machinery, which might not be warranted by the possibly limited demand. It is generally understood that the octagon is the more expensive to make. The objections urged against the octagon barrel are more noticeable in arms of larger caliber and those taking high power smokeless loads that develop great heat. Reflected light or heat radiating from the polished corners of a rifle barrel is always a source of annoyance to a marksman, but in an arm as small in caliber and of as low power as our common .22 caliber, we think the vagaries of expansion caused by varying thicknesses of the octagon barrel might be considered negligible.—R. A. K.]

### LOADS FOR BIRD SHOOTING

EDITOR GUN DEPARTMENT: I have just purchased a Parker Extractor gun, 12-gauge, left barrel full choke, right barrel modified choke. I intend to use this gun for ducks and upland birds. Are the bores in this case a good selection?

I have done very little shooting and would like you to advise me what size shot to use for ducks and what size for game birds on land. What is the effect on guns of smokeless powder and black powder? Which is the best to use? What is meant by a pattern? Thanking you in advance for your advice in the matter I am,  
Yours,  
READER.

[You could not have made a wiser selection of a gun for the service which you have outlined.



The Parker is one of America's favorite high grade guns, and has long been recognized as a standard of excellence in the hunting field and at the trap. Had you been a veteran game or trap shot, your choice of gauge and bore for a general service arm would be just what you have selected, the right barrel, a cylinder bore, or modified choke (the latter preferred) "for the rise," for grouse, quail, snipe, etc., and the left a full choke for long shots at the game just named, and for water fowl shooting, the trap and for any service requiring a powerfully driven load and a close pattern. For all small feathered game, such as quail, snipe, etc., a close pattern is required. A suitable load for this game would be 1½ of No. 8, 9, or 10 shot. For ruffed grouse the same weight of No. 7 or 7½ shot is generally used, and for fast flying water-fowl, such as ducks of different varieties, No. 5 or 6 shot is recommended. A good fast load for ducks is 26 or 28 grains of Ballistite, or Infalible (dense powder), or its equivalent—3¼ to 3½ drams of bulk powder—in a Winchester Leader or U. M. C. Arrow shell, and an ounce, or an ounce and an eighth, of No. 6 chilled shot. The object in using a heavy charge of powder and a light load of shot is to gain velocity and penetration, and thereby reduce the long lead so necessary with slower loads. This method holds good with any kind of game, but with birds of erratic flight, like the snipe and woodcock, there is a compensating advantage in a wide dense pattern within certain limits. When using smokeless powder, the loads may be slightly accelerated by using hard wadding, but it will give you a slightly more open and less even distribution of the pattern when used with dense powder. Smokeless powder is preferable under all conditions.

Each arm has certain little peculiarities of its own and to get the best possible results it is well to experiment with different loads of powder, sizes of shot, and systems of wadding. By targeting each load and carefully noting the number of pellets in a 30-inch circle at a range of 40 yards, the distribution and the penetration of the shot, one can soon determine which loads will give the best results for the service required. The effect of either black or smokeless powders is not detrimental to the barrels while in actual use, but no arm should be allowed to stand over night without being thoroughly cleaned and oiled inside and outside. Be careful to remove all lead and other accumulations. Rub until the arm to get all moisture out of the metal, oil thoroughly, place in case or cabinet and examine at least once a week when not in use.—R. A. K.]

### THE .32 SHORT COLT

EDITOR GUN DEPARTMENT: Please tell me what the bullet of the .32 short Colt cartridge

calibrates. I would like to use it in a .32-40 Winchester barrel with a reduced load of powder. If they can be used in my barrel I could buy the bullets from the Winchester Company almost as cheaply as I could make them. Respectfully,  
W. B.

[The bullet as used in the .32 short Colt cartridge is an outside lubricated bullet. It weighs 80 grains as loaded by the Winchester Company and has three diameters, one for the mouth of the shell and one for the barrel. The correct diameter of bullets for the .32-40 rifles is .319. Whether you could use bullets of less diameter would depend on the temper of the bullet and the charge of powder used. If the latter is heavy enough to upset the bullet to fill the grooves, good work may be done with sub-caliber bullets. As the bores of rifles intended for use with black powder and lead bullets will sometimes vary several thousands of an inch, I would suggest that you push bullets of different sizes through your rifle, from the breech if possible, and select one that will fit to the bottom of the grooves. This will ensure you good results if your powder charge is right.

I would advise the use of a square base, groove diameter bullet when they are to be driven by reduced charges of powder. I cannot give you the exact diameter of the .32 short Colt as they vary somewhat according to the ideas of different makers. The bullets and shells vary from the original rim fire outside lubricated only in being central fire and inside lubricated. To make the inside lubricated bullets of this class, take the rifling of a barrel that is as large as the outside diameter of the shell, the base of the bullet is cast hollow so that it will upset easily. I believe the Colt .32 short bullet is smaller than the Winchester .32-20, which calibrates .311. I think the 98-grain bullet with square base, measuring .319 will give you a satisfactory performance.—R. A. K.]

### AN OLD SMITH & WESSON

EDITOR GUN DEPARTMENT: I have among my collection of revolvers and pistols an old Smith & Wesson .22 caliber, 7-shot single action pistol, which I unearthed in the junk pile of a friend a few days ago. I am unable to determine the model of same. Possibly, by giving you some idea as to its appearance, you could furnish that information.

A curious feature about the weapon is that the main frame is highly nickel plated, while the barrel and cylinder are of a dull brown color, evidently being at one time blued finish, although a thin coating of rust now obscures that color. The method of loading the weapon is exactly opposite to that employed on the other Smith & Wesson revolvers such as models 1880 and 1891, as



instead of the barrel breaking downward with the cylinder attached thereto, as in the case of the said models, it tips upward, leaving the cylinder attached to the main frame, the barrel catch being situated on the lower left hand corner of the frame, while the hinge is in the upper left hand corner. The cylinder is very small, being only fifteen-sixteenths inch in diameter and the same length as a .22 short cartridge. The distance between the inner wall of the cartridge chamber and the exterior of the cylinder is exceedingly small, in fact, being only one-thirty-seconds inch in width, and I would have some hesitation in shooting smokeless powder in it. I am unable to locate the stop for the cylinder, although a stop notch adorns that important body. The grip is of wood, and is exceptionally comfortable for so small a weapon. It is of the square butt design and is patterned after the grip of the Smith & Wesson model 1905. The trigger guard is conspicuous by its absence, and the trigger is similar to the one on model 1880. The barrel is also similar to the one on that weapon, and is  $3\frac{1}{4}$  inches in length. This is very finely rifled, being .003 inch deep and .118 inch wide. The weapon is evidently intended to be used as a target pistol, being equipped with a rear sight capable of being elevated up to the extreme range of the cartridge, but the barrel is hardly long enough to give good results for more than 50 yards. The front sight is the regular standard, used on all revolvers. There is a very close connection between the cylinder and barrel, but owing to the absence of any stop to arrest the momentum of the cylinder at the moment of discharge, a slight inaccuracy is liable to result, caused by shaved bullets. However, the alignment is nearly perfect, and I do not think there will be any trouble on that score.

I have not as yet used the weapon, as the barrel and cylinder are somewhat rusted. I intend to fit an ivory bead over the front sight, and otherwise improve the arm, and will advise you later as to its shooting qualities. Yours very respectfully, W. J. ERICKSEN.

[I cannot at present give you the date of issue, but hope to be able to do so soon. I have a duplicate of the one in your possession, but it bears no date that I can discover. However, I remember that this type of revolver was quite common from 35 to 38 years ago. The frame is of composition, or gun metal, which was commonly used for that purpose in earlier days. Notable instances of this were the "Volcanic Rifle and pistol which was H. Smith & D. B. Wesson's patent (the forerunner of the Winchester), the Henry rifle, Warner's B. L. Carbine and several types of derringers and pistols. I have a solid frame revolver marked "Eagle Arms Co., New York," about .30 caliber, and

another evidently the same patent marked Lant's or Plant's Mfg. Co., New Haven, Conn., on the rib and Marwin & Bray, New York, on the side of the barrel. Both arms take copper cartridges and are loaded from the forward end of the cylinder. The empty shells are ejected one at the time by means of a little rod that works in a slotted groove at the rear of and through the recoil shoulder. The larger weapon is about .40 caliber; both arms have the side protected trigger, old gun-metal frames and square butt, rosewood handles, and in general outline and finish would correspond with your description of the little .22 caliber S. & W.

The stop for the cylinder in your little foundation is located under and attached to the rear sight. You will notice a small hump, or nose, on the upper square of the hammer. The sole function of this nose is to lift the sight base as the hammer is cocked. With the lifting of the sight base, the bolt or cylinder stop is withdrawn and as the hammer reaches full cock, the sight base with bolt attached, actuated by a flat spring underneath, springs back into place and again locks the cylinder in position for firing. As the hammer falls the nose of the hammer does not unlock the cylinder. This is arranged for by a split spring which permits the nose of the hammer to pass between its points, leaving the sight in position and the cylinder locked until after the discharge.

It is possible that owing to the age and adventures of your new acquisition the bolt spring may be rusted through and does not police the bolt to engage the locking notch, and for this reason you have failed to note its plan of construction. You can easily dismount that part of the mechanism by driving out the first friction pin to the rear of the hinge screw. The latter does not engage the sight base, owing to the dual duties of the rear sight. I do not think it was intended for vertical adjustment. The study of old arms is to me a most agreeable and fascinating pastime, and as you have a collection, I would be pleased to exchange ideas with you with the object of mutual benefit. Your description of the little .22 S. & W. is excellent and exhaustive.—R. A. K.]

#### ANENT REVOLVER SHOOTING

EDITOR GUN DEPARTMENT: Do you think a .45 caliber revolver can be used as well at 30 yards as a .22 caliber revolver with say a five or six-inch barrel, at the same distance for target use or wing shooting?

Is it all in practice or is it the strength of the wrist that keeps a .45 caliber from jumping?

I can hit a half dollar at 20 paces (about forty-five feet) with a 1902 model Smith & Wesson 3½-inch barrel but cannot hit anything



smaller than a 12-inch square with a single action Army Colt stamped "Colt's Frontier," the same distance. I cannot do anything with a .25 caliber automatic. It just seems to slip away from me. Yours, A. E. C.

[I believe the average man will be able to do better shooting at pistol ranges with the .22 caliber revolver or pistol than with the .44 or .45 caliber revolver, with standard lengths of barrel. Fine target work at any range, is not to be expected with any arm having a barrel of less length than your model 1902 Smith & Wesson. This is one of the reasons why you can not get better results with your .25 caliber automatic pistol. The weapon is too short to give you a good sighting plane, and too light to hold steadily while aiming, and although fair shooting may be done with it at from 15 to 20 yards, it is not adapted to target or wing shooting. When shooting a large caliber pistol or revolver like the .45 caliber Colt revolver, or the .50 caliber Remington pistol, the arm should be held with a degree of firmness sufficient to prevent it from jumping out of the hand, more than this will impart a tremor to the weapon, and the heavy recoil will soon disable the wrist of the gun is gripped too tightly. If properly held, the largest hand arms in use may be shot indefinitely, with satisfactory accuracy, and without discomfort. If perfectly sighted and properly held, the Colt .44 Frontier or .45 Army, will place their shots in a 3-inch circle at 50 yards. There is a distinct advantage in shooting arms of less weight and lighter caliber at target or wing practice, if your practice is to be prolonged. Practice alone will not make you an expert, nor is great physical strength required. Select an arm adapted to the kind of shooting you will indulge in most. Study cause and effect, practice frequently rather than too long at one time, and you will soon master the game. —R. A. K.]

The arm is simple and durable and not likely to break down or get out of order, and the cartridge is especially adapted to the small game which abounds in your country. It would be admirable for rabbits, hares, wild turkey, Cocha Javelina, doves, quail, and one need not hesitate to take a well aimed shot at your little spotted tiger, or mountain lion with this powerful and rapid shooting little arm. The Winchester .22 automatic rifle is also adapted to your country, but I would recommend the model 1890 with cartridge named as preferable on account of the stronger cartridge and being the more reliable under the conditions that prevail in Sonora. The .22 automatic is accurate, but not as strong a shooter, especially at 150 to 200 yards.

The model 1897 Marlin takes the common .22 short, .22 long and .22 long rifle cartridges, none of which are as powerful or have so long range as the .22 W. R. F. All the rifles named can be fitted with Lyman or Marble rear peep sights, and ivory bead or gold bead front sights. The cartridges compare in range and penetration as follows:

The .22 W. R. F. has a range for accuracy up to 200 yards, weight of bullet 45 grains, muzzle energy 107 foot pounds, initial velocity 1036 foot seconds, penetration seven pine boards  $\frac{1}{4}$  of an inch thick. The .22 automatic is identical in performance, but has one inch less penetration. The .22 long rifle cartridge, which is the heaviest handled by the model 1897 Marlin, has the same range, carries a 40 grain bullet and has a penetration of but five  $\frac{1}{4}$ -inch pine boards. I hunted in Sonora in 1905 in the vicinity of the Sonora River, and with my experience, my choice for a .22 caliber rifle, considering the game to be had, the climatic and other conditions, would be the Model 1890 Winchester, the .22 W. R. F. cartridge.—R. A. K.]

#### .41 CALIBER COLT

EDITOR GUN DEPARTMENT: I am going to purchase a .22 caliber repeating rifle for hunting purposes. Which rifle do you think is best suited for shooting rabbits and hares at from 100 to 150 yards? What do you think about a Model 1890 Winchester, caliber .22, Winchester rim fire? What of a .22 Winchester Automatic? Is it accurate at 150 yards? What of a Marlin model 1897, .22 caliber lever action? Could they be used with a Lyman or Marble rear peep sight. Which rifle do you recommend me as the most strong and accurate? Very truly yours, E. R. B.

[I would unhesitatingly recommend the model 1890 .22 caliber rifle, taking the .22 caliber Winchester rim fire cartridge for your purpose.

EDITOR GUN DEPARTMENT: I have lately started to take the Outer's Book. I like it very much and find a great deal of enjoyment in reading the Gun Department. I have a fine Colt .32 automatic, a present to me when there were comparatively few of them made, in fact, one of the first: No. 447. H. W. R. in the October number wants to hear from owners of .41 calibers. I have a .41 single action Colt, 5 $\frac{1}{2}$ -inch barrel, with a fine pair of pearl stocks, that I have carried for twenty-three years. It has been in all of the southwestern states, and will stop a coyote on the run at 150 yards and it never has failed me yet. I would not trade it for the best double action gun on the market today. Two hundred grains of lead will stop a great deal, if put in the right spot.

A. H. B.





# GUNS AND AMMUNITION

EDITED BY ROBERT A. KANE



This department is intended to be a place for the exchange and discussion of views on any subject pertaining to arms and ammunition, from which no one with an idea to advance shall be barred. The only conditions are that the opinion must not be manifestly absurd, that it be expressed in courteous language and that no personalities be indulged in. Each opinion is printed for what it is worth and its publication does not commit the editor to the view expressed. The widest range will be permitted and our readers are invited to make free use of these pages, but it is important to remember that *under no circumstances will personalities ever be permitted.*

## The Metamorphosis of the New Springfield

By EDWARD C. CROSSMAN

### PART III

ALSO Colby evolved a wild and wierd scheme to do away with the flag shaped safety-lock thumb-piece and to make the safety of the shotgun "push-over" type but the necessity for camming back the firing pin against the pressure of the already compressed main spring prevented any departure from the accepted type as used on New Springfield, Mauser and Mannlicher rifles.

It being our first attempt and the ideas refusing to come in coveys like quail, but stringing in day by day as the rifles were made, the last rifles had points of value, not to be found in the first. Being somewhat wise in my generation, and recollecting that if you must pioneer, the nearer you are to the tail of the procession, the more you will profit by the experience of those ahead, I cheerfully assigned to my rifle the role of pigtail and quarreled not with those who wished to be first.

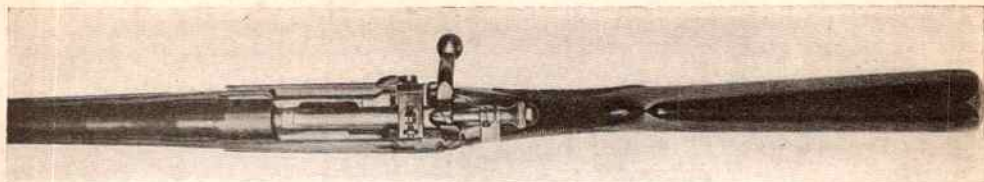
The sights used were ahead of the stock variety, which are made with deep notches into which the pointer clicks and preventing any fine adjustment, but they were not entirely satisfactory. We had the Lyman people graduate the slide into 1-50 inch parts, leaving off the notches, but the lines were hard to read and the fifth lines not being whitened, hurried adjustments were hard to make. Finally an arms accessory company evolved for the writer a sight on the Lyman lines, made heavier and with a screw running vertically through the elevation slide and having a knurled head on

the top. By turning this the slide moves up down for fine adjustments. By pressing button on the side of the sight the slide is released from the screw adjustment and moves freely in the fingers for quick adjustment. took but a little figuring as to inter-sight distance pitch of the thread of this screw and graduation of the elevating slide to make this a fine micrometer rear sight with each degree on the graduated head of the screw equal to one inch each hundred yards. Unfortunately there but one in existence and that goes to Africa with White's partner.

For the forward end of the gun the writer could find nothing finer than small sized Shearhairs.

Finally the first rifle was turned out, ready to ship to the Honorable Mr. White in response to his hebdomadal inquiries as to "When is the gun coming?" We gazed at it, pawed over, tried its balance and fit and were satisfied—nearly as cranks can be. The rifle balanced just under the extractor collar on the bolt when it is closed. This means just half an inch at the rear of the junction of the bolt and trigger receiver and  $4\frac{1}{2}$  inches from the trigger guard. In other words, a shotgun balance. White's bolt handle was covered with leather by an expert saddle maker on the prescription of a certain galoot in Minneapolis, but it came about the third day White had it and looked sloppy besides in spite of its neat fitting. The other rifles had this part checked





TOP VIEW OF MR. CROSSMAN'S RIFLE, BARREL REBLUED

The rifles turned out unexpectedly heavy, after the figuring had shown that they should weigh  $7\frac{1}{2}$  pounds. We did not take into consideration the heavy walnut used and the full stocks with their cheek pieces. White's rifle weighs about 8 pounds, not too much for comfortable shooting with the powerful 1906 cartridge or for lugging in the woods or on comparatively level country, but too heavy for packing over high mountains where perhaps a canteen and pack are added and the going is

The next sporter Springfield will have its barrel turned down to more of the dimensions of the Sauer-Mauser, its stock will be thinned down a trifle and the cheek piece left off. This will bring its weight to about  $7\frac{1}{4}$  or  $7\frac{1}{2}$  pounds, nearer right for a rifle devoted to the game trail alone.

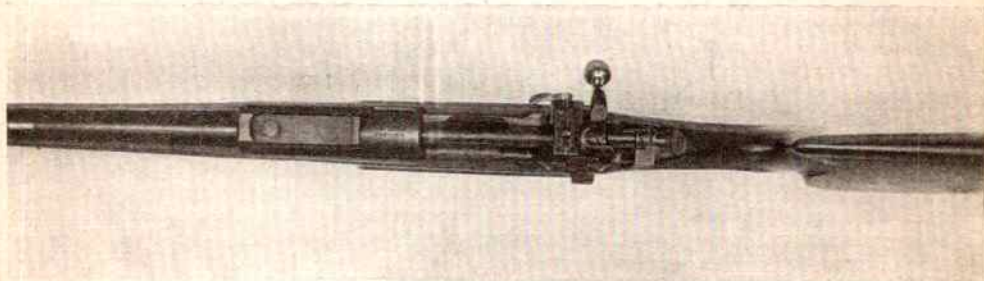
About the time the first rifle was finished, along came a letter from Lieut. Townsend Whelen, telling of his own rifle just finished for him after about six month's work. His rifle is



MR. CROSSMAN'S SAUER-MAUSER

dangerous even to one unencumbered. The writer, having just returned from a pasear over the steepest and rockiest range of mountains he has ever seen and being accompanied by the sporter Springfield, is of the opinion that for such work a rifle weighing not over 7 pounds is indicated. A pack of 15 pounds consisting of an 8 pound rifle, a pound of cartridges, a four-pound canteen of water and a two-pound camera is not excessive on good ground or where the thermometer stays below 100 but neither of the latter stipulations held true in this case.

much like ours, having the same form of cheek piece and fine walnut stock but having a wooden hand guard over the bare spot on the barrel. This solution is good but we were unable to work out a satisfactory method of attaching this hand guard without using bands and it also looked to us as though the rifle would lose in its graceful appearance with this addition. Lieut. Whelen being about a size larger than Jim Jeffries, 6 feet 2 inches, and broad in proportion, his stock measured  $14\frac{1}{2}$  inches long and dropped  $3\frac{1}{4}$  inches at the heel.



TOP VIEW OF WHITE'S RIFLE, REAR SIGHT BASE LEFT ON



He also had his rifle chambered for the 1903 cartridge, in which I cannot agree with him in view of the good work the sharp point has done on game and the ease of using the 220 grain bullet in the 1906 case if a sharp point bullet is looked upon with suspicion.

The butt plate on his rifle is like that on my own, which he says is the finest he has ever seen. He also uses patent sling fasteners, similar to those on the Winchester Model of 1895 musket, made with patent snap fasteners. The Lieutenant pronounces his rifle the finest arm he has ever laid eyes upon—which means that it must be some good gun.

Lieut. Whelen's letter also solved the sling problem for us in a mighty satisfactory manner. The start is a piece of leather about 68 inches long and 1 inch wide, of good pliable stock, similar to the "Reinbach" of Abercrombie & Fitch. One end is passed up through the upper swivel, dressed side toward the rifle, then this end is carried downward again and laced to the main strap to form the arm loop for firing. This must be adjusted for the individual before lacing up the end. The loop formed at the upper swivel is also laced together, short latigo lacing being used in both cases.

The lower end of the strap, below the loop, is passed through the lower swivel, dressed side toward the rifle, and then brought up and hooked into the outer side of the loop. A small brass hook with two claws can be easily made by a brass worker, and this riveted on to the lower end of the strap. Two claws must be used, else the strap will pivot on the single claw and hang out of line.

Holes are punched along the loop's outer side for this hook, one for the taut or parade position and various ones for the adjustment of the sling for carrying the rifle over the shoulder or the back. For firing either off-hand or prone with the aid of the loop, the claw is cast off and rehooked into the strap far enough down to allow the loop to be adjusted without entailing any pressure on the butt swivel. The lacings are to prevent marring the stock which is the case when metal buttons are used, while the appearance is much neater.

This is by far the best sling the writer has ever seen and we owe Lieut. Whelen one for the clever idea.

The service rifle is equipped with a sight cover over the front sight to prevent it from being knocked out of line. This is easily detached by an upward jerk. We left this on the rifles and are thus protected from the breaking or bending out of line of the front sight by a chance blow or a fall. Except for the quickest shooting it does not interfere with the catching of the sight and the writer uses his on the rifle even in skirmish or rapid fire.

For long trips, such as White is taking into Africa, good insurance against any possible trouble would be the addition of a spare extractor and sear spring, with perhaps a sear to the parts in the butt of the rifle. Not that there is one chance in ten thousand for these parts to give way but for the added feeling of security they afford the user. In the writer's experience in the National Guard since the first issue of the New Springfield, he has seen but one part break in the hundreds of rifles under his notice. This is the striker—the forward end of the firing pin. In one case this was on a .22 caliber gallery rifle where the part constantly impinged upon the hard steel firing pins of the supplementary chambers. In the other the rifle had been snapped constantly in home practice and the part had become crystallized. This is the most likely part to give way, however—if any part of the simple and strong action can be said to be likely to give way.

The rifle will not show any jams that require a small automobile shop to reduce and will travel with its lever action brother year after year and show fewer breakages and jams. Which is brought home a little strongly to the writer by having to lug home a new automatic rifle from the range, with the gun jammed firmly shot, a loaded cartridge in the barrel and the firing pin spring compressed. The possibility of this occurring in the mountains is one not comfortable to reflect upon.

What is more, to replace a broken striker you could not use a single tool if you had a whole shop at your disposal. Ten seconds will put the broken part in your hands and ten more will re-assemble the rifle with the new striker in place. To replace any other part, such as the sear or the extractor, the little Government 2-inch folding screw driver is sufficient for the first while the bare hands are enough for the second part.

In details we left off the bolt stop, a small pin that projects through the bottom of the locking lug channel and engages in notches in the locking lug as it crosses the pin. This is to prevent the bolt from sliding forward and covering up the clip slots when the rifle is being loaded but it also makes the bolt a little hard to start forward when closing the gun.

An improvement in the rifle would be a weaker magazine spring. The Sauer-Mauser is much weaker than that of the New Springfield, although there is ample strength to present the cartridges before the head of the bolt, and loading either by means of the clip or singly is much easier. Another feature that adds to the ease of loading the Mauser is the thumb groove cut in the left receiver wall. This allows the user to press the cartridges from the clip clear into the magazine by a straight downward push while with the Springfield, the thumb must be pulled away



from the wall until merely the tip bears on the cartridges. This groove is not cut in the Springfield for the reason that the seat of the cut-off runs forward along the wall where this groove would fall.

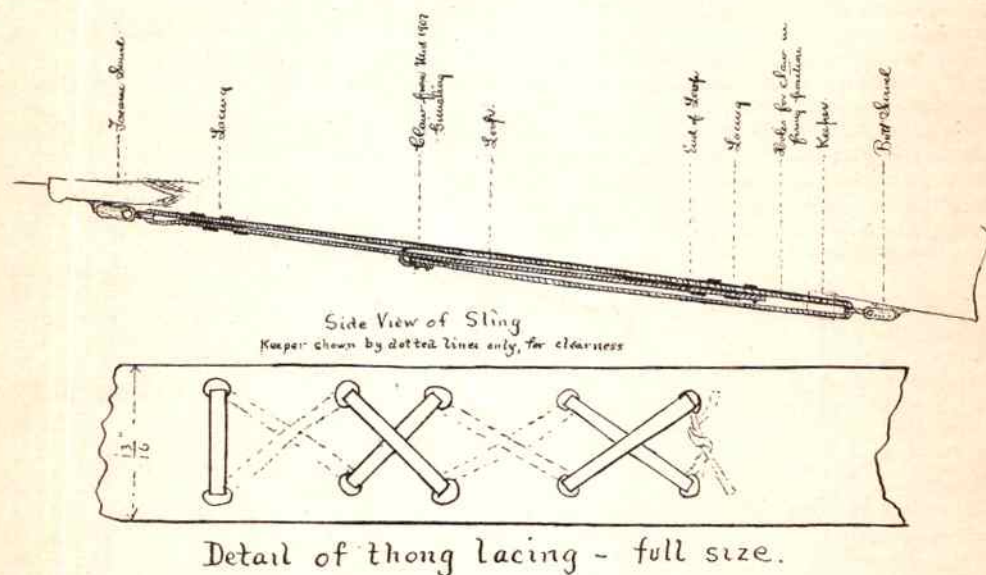
It might be interesting to compare the actions of the Springfield and the Sauer-Mauser—the latter typical of all the modern Mauser rifles.

A contributor to Outer's Book stated that the Springfield bore very little similarity to the Mauser bolt and magazine. The amount of truth in this statement can easily be ascertained by comparing the two rifles side by side.

It may be noted parenthetically, that the Mauser has won out hands down over all other

of a hollow cylinder of steel, with a bolt handle on one side, two locking lugs on its forward end and fitted with a collar working in a groove near the front end, to which is fastened the extractor. In this slides the firing pin, actuated by the main spring. The parts are assembled by a part called a sleeve, in which are the safety and the sleeve lock.

The cartridge handling mechanism consists of a flat four-leaved spring, a floor plate closing the bottom of the magazine and a follower that raises the cartridges before the bolt. The military Mauser and the Springfield are precisely alike in magazine. The Sauer-Mauser has a little lever lying along the bottom of the floor



Total length of leather strap used in sling, 63 inches. Width of sling,  $1\frac{3}{4}$  inch. Material of sling, English fair leather, rather thick, afterwards soaked in neatsfoot oil. Thongs of rawhide. Sling swivels same as used for butt swivel on Winchester Model '95, .30 caliber musket. Claw taken from old government sling and slightly narrowed by filing down base and bending together the hooks. The length of the firing loop must be determined by experiment, and the total length of the leather depends of course on the distance between swivels. The advantages of the leather thong lacing instead of claws or brass buttons is that it makes no noise does not scarr the stock when pressed or knocked against it, and weighs less. I ordered the leather for this sling from Abercrombie & Fitch Company, specifying a piece 65 inches long and  $1\frac{3}{4}$  inch wide, and two thongs for lacing, 12 inches long. I then made it up myself in about an hour and a half, punching the holes for the lacing, and riveting on the claw. Each lacing took only about 7 inches of thong, the ends being tied in a single knot between the two thicknesses forming the loop. After making it I soaked it in neatsfoot oil, which renders it soft, noiseless, waterproof, and preserves the leather.

actions for military use, standing the constant manipulation in the hands of the soldier, the racking blows of thousands of rounds of smokeless cartridges and the abuse which is the part of the military rifle, as no other action on earth ever did. With practically nothing to break about it, with its parts accessible without tools and with no jams possible that cannot be reduced immediately, the Mauser Model of 1900-02 is probably the last step forward of the hand actuated rifle. Its inventor has put practically all his attention to the military automatic arm and the next step from the excellent Mauser will be to the automatic rifle.

The Mauser bolt, like the Springfield, consists

plate which cams back the floor plate from its engagement with the lip of the receiver and allows the cartridges within the magazine to fall out. In the military models of the Mauser and in the Springfield, an upward pressure of a pointed instrument like a bullet, raises the floor plate catch and then a backward pull draws the plate from its engagement with its lip.

The bolts are practically alike. The details in which they differ are first, the firing pin being cut in two in the Springfield, the forward part being called the striker. Second, the safety lug on the Springfield turns down in front of the right curve of the receiver bridge, while on the Mauser it turns down into a recess cut in the



floor of the receiver just below this curved portion or bridge. The Springfield extractor is shorter, due to its butting against the safety lug on the bolt and the Springfield bolt is also devoid of the raised rib or lug lying under the Mauser extractor when the bolt is in the closed position.

The sleeve locks differ slightly in their design while the bolts take apart a trifle differently, but it is plain that the board of officers designing the Springfield, simply took Paul Mauser's latest rifle and made changes in slight details where the alteration seemed for the best.

The Mauser bolt handle is turned down at a sharper angle to the bolt than the Springfield, the rod being straight, keeping close to the frame and the bolt knob being larger in diameter. The effect is neater.

The cost of the sporter Springfields is quite high as compared with what they could be turned out for with cheaper stock making methods and less costly wood. The items run about as follows under Wundhammer's revised scale of prices for the work:

|                                                                                   |                |
|-----------------------------------------------------------------------------------|----------------|
| Parts, including express charges, about.....                                      | \$12.50        |
| Stock blanks and express.....                                                     | 5.00           |
| Sheard front and Lyman rear sights.....                                           | 7.50           |
| Ross fasteners and sling swivels.....                                             | .60            |
| Making stock, about 4 days' work.....                                             | 15.00          |
| Other work, making butt plate, fitting sights, checking parts, bluing barrel..... | 8.00           |
| Slings.....                                                                       | 1.25           |
|                                                                                   | <u>\$49.85</u> |
| Less express charges.....                                                         | 5.00           |
| About.....                                                                        | <u>\$44.85</u> |

Some comparisons: Sauer-Mauser, plain sights, for 8 mm. cartridge, with inferior stock, \$50.00. Mannlicher-Schonauer, plain sights, inferior stock and for inferior cartridge, \$75.00. And it must be remembered that in the Springfield case the stocks were made to order for the individual purchaser, and what is more, German rifle ne'er crossed my path with stocks as fine as these of ours. Word just comes that the Sauer is at last to be sold chambered for the 1906 cartridge, as I urged the makers over a year ago. This will be a good gun but still inferior to our rifles.

Perhaps some doubting brother will want to know what advantages we gained by all this fussing and bother, and why a box magazine Winchester, for example, would not have filled the bill.

If you don't like the bolt gun, you would not see much advantage in ours. The merits of the bolt action have been gone into pretty thoroughly and whether one prefers the lever or not, the advantages of the other type of rifle are too apparent to be denied.

We have the most perfect bolt action rifles in the world from the standpoint of action. They are made of materials so choice that the steel

parts alone cost as much to make as the ordinary lever action rifle in its entirety with a set of Lyman sights and a case thrown in. These parts have been tried out in three hundred thousand other rifles for the past five years under the supervision of officers whose business it is to report any fault or weakness appearing in the guns. The rifles take what is the finest cartridge on the globe outside the .280 Ross, from the standpoint of military work, target shooting or game killing. The cartridge is that of the United States army, obtainable anywhere in this country, subject to the criticism of our finest shots from one year's end to the other and to the Government's machine rest tests as well and therefore kept to the highest standard of cartridge making. It is far ahead of the old blunt point bullet 8 mm. cartridge and best of all costs civilian riflemen a paltry \$31.90 per thousand laid down in the rifle club's home town from any private maker, or but \$29.10 per thousand from Uncle Sam, delivered at the arsenals.

Compare its trajectory figures with those of other well known game cartridges.

Shooting at 200 yards, height of the 1906 half way 2.8 inches. The .30-40 rises 5.47 inches. At 300 yards the 1906 rises 7.08 inches, the .30-40 rises 13.55 inches.

With 200 yards fixed sighting, the bullet strikes 10 inches low at 300 yards. With the .30-40 the bullet strikes 19 inches low.

Last but not least, Lieut. Whelen writes me that machine rest tests with .30-40 and 1906 with 190 grain soft point bullet shows groups from 7 to 13 inches across at 200 yards, while the .30-30, .303 Savage and .32-40 high power show about the same results. Consider the accuracy. The 1906 groups its shots in about a 3-inch circle over the same range and has done better than this.

The accuracy of the 1906 cartridge has been proven to the satisfaction of any intelligent target or hunting rifleman and its killing effect is also beyond doubt. Besides this I learn that a certain factory is about to put on the market a Spitzer game killing bullet on the Ross plan but loaded into the 1906 cartridge.

Our stocks are made to suit us and are of tough, well figured walnut, finished in oil, not the cheap varnished affairs of the American stock rifle nor yet the pretty but sometimes brittle stocks of the German arms.

My one regret is that every crank who reads of these rifles and finds them good and wants one like them, cannot dig down and forthwith own an American-made, bolt action sporting rifle.

To me they are the most satisfactory rifles I have seen. But my predilection for the bolt action rifle being known, I may be regarded as being unduly prejudiced. Read, therefore, the

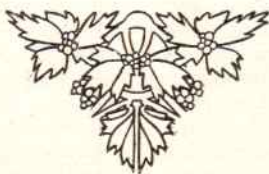


use. Through the courtesy of Mr. E. F. Schmidt of Seattle, who is interested in everything pertaining to gunnery, and the enterprising Times of Seattle, which first published a full account of the shooting we are enabled to give our readers a detailed description of a narrow escape from instant death through the medium of a common four-in-hand necktie. The Times' account is in part as follows:

"Imbedded its entire length in the folds of a four-in-hand silk necktie is a .38 caliber bullet meant to take the life of George Welch, a former San Francisco bar tender. It was one of four bullets fired at Welch by an unidentified man . . . . and the only one of the four that might have inflicted a fatal wound. The other three have produced apparently only slight injuries. According to witnesses Welch was standing behind the bar when a well dressed young man entered the place and going directly to Welch opened fire on him without a word. Four shots were fired in all. With the first shot Welch reeled while the other bartenders dropped behind the bar and patrons ran from the place or dropped to the floor to escape the flying lead. Welch, however, got them all. One bullet plowed its way across his chin, another passed through the fleshy part of the neck and, as he was reeling a third struck him in the back and ranged upward towards the shoulder. The fourth bullet was not found until the injured man was taken to the City Hospital and then it dropped out of his necktie. It had been so firmly imbedded in the folds of the silk, right at the point where the heavy knot was formed, that it was not dislodged by the handling of the wounded man at the saloon or when he was placed in the ambulance."

Mr. Schmidt, who forwarded the clipping, states in his letter that the weapon used was a Colt Automatic pistol and it was held about 20 inches from the victim when fired. Mr. Schmidt very properly regards the occurrence as remarkable and asks what caused the bullet to be stopped so suddenly in its flight at such a short range. The Colt .38 automatic cartridge as used in the pocket model, carries a bullet weighing 95 grain. It has an initial velocity of

865 foot seconds and develops an energy of 158 foot pounds, with a penetration of about  $3\frac{1}{2}$  to 4 inches in soft pine. The .38 military automatic cartridge as used in both the military and pocket model of 1902, carries a bullet weighing 130 grains. Its initial velocity is 1075 foot seconds, energy 335 foot pounds and penetration nine pine boards  $\frac{1}{8}$  of an inch thick. As we are not informed as to which model of pistol and cartridge was used or whether the bullets were full metal patched or soft nose, it would be inconclusive for us to hazard a theory as to the penetrating power of the bullet or the resisting quality of the fabric. A four-in-hand tie, such as is shown in the photo, is made up double of various grades of silk and padded for its entire length with a thin layer of cotton wool to give it body. When tied in the conventional method, that is with the "double wrap," and the knot drawn loosely, there would be ten thicknesses of silk and five layers of cotton wool to offer resistance to the blunt conical bullet of the .38 caliber Colt automatic. Cotton wool has long been known to possess, to a remarkable degree, the bullet stopping properties peculiar to all closely matted wooly or downy substances. Raw silk is of the same nature, and even when spun and woven into a thin fabric it would still offer considerable resistance to a blunt projectile, if not stretched or backed by something solid. The position of the knot just over the soft hollow of the throat undoubtedly contributed among other causes to prevent the bullet from penetrating the several layers of silk and cotton by affording a soft yielding background. It is impossible to determine the weight or make of the bullet by the photo; presumably it is a full mantle 95 grain as the base is not covered, as would be the case if it were a soft nose. The base is also slightly deformed, which would not be likely to occur if the bullet were a half mantle with the metal patch completely protecting the base. In any event, the happening is a remarkable one, and, as Mr. Schmidt suggests, "If a common necktie will stop a bullet from a modern weapon, fired at arm's length, is there not a possibility of some clever genius inventing a bullet proof jacket?"





## About Shotgun Calibers

By H. W. HANNON

I CAN well remember when the Minie or expansive bullet was adopted by the United States Army. Col. Minie's rifle had been used for some time by the French army, and proved its superiority at the siege of Sebastopol so conclusively, that the armies of the world were being equipped with some pattern or modification of it. The board of officers chosen by United States Government, thoroughly tested it, and published in a small volume, a most exhaustive report, with diagrams and tables. It would be interesting reading for the rifleman of today. The central thought seemed to be, *largest caliber* strength of soldier will permit. There seemed no question as to effectiveness being in direct proportion to size of bullet. The general consensus of opinion, if I remember, favored .58. The modern soldier would deem it better fitted for a cannon's bore. The change has been largely due to *improved ammunition* and the rapid fire arms of today, but the question of caliber has never been settled. Thus had one gathered all that has been written on the subject of big bores, medium bores, small bores, etc., etc., he would have a library of no mean proportions, a multitude of expert opinion, and a still unsettled question for contemplation.

The shotgun has, however, plodded its way almost unnoticed, till within a few years, so far as caliber went. The 11, 14, 16 and 20 of flint lock days, being nearly the same now used by our gunmakers. The advent of the breech loader, forced 10's and 12's to the front. The former the favorite of fox and duck hunters, and its superior range, pattern and effectiveness was loudly vaunted by its users; and by them proudly proclaimed "King of Calibers." Its reign was not, however, to be long, or peaceful, for another royal claimant appeared in the 12 bore, and with cartridges adapted for long range it soon forged to the front—the chosen favorite for trap and heavy shooting. For years its sway was almost undisputed, and it will probably always retain a large and loyal army of supporters for some kinds of shooting. "But uneasy lies the head that wears a crown," is an adage as true of guns as men, and another claimant has appeared on the scene, the 16, whose royal welcome has proclaimed him the people's chosen prince. The rabble has always been ready to shout: "The king is dead," and heartily hail his successor "Long live the king," but in

this case it is the voice of the conservative that calls him to his own. If we carefully consider his claims as set forth by his advocates, we can but realize there is much justice in them. The first and most important being weight. They claim the 12 to be (when made in same proportions) 20 per cent heavier, which, with the added weight of the ammunition, gives that arm a very serious handicap at the outset. Then as lengths of barrels are formulated on the proportion of caliber, it gives a shorter barrel that still further adds to ease of carrying, and is an advantage not to be despised for upland shooting. The penetration seems (all other things being equal) slightly superior to the larger bores. The size seems to appeal to the shooting public, as nearer the true proportion. That the only disadvantage is in the smaller spread of shot, and that is more than offset by the speed with which the 16 can be handled. That, as 1-ounce is one of the favorite shot loads of the 12 light weights, the 16 will handle the same amount perfectly, and that only when this charge is increased that the 12's superiority is apparent.

Assuming the effective killing circle of the 16 is 24-in. circle at 35 yards with one-ounce shot, No. 8, 409 pellets. The 12 shooting 1½, 460 pellets, will have 51 shot to distribute around this circle, a strip 72 inches approximately in length, as 60 per cent places a pellet in a square of about 1½ inches, we at once realize the killing circle has been not greatly increased by the use of the larger bore. The guns still in existence made by Joe Manton, whose reputation was world wide, indicate that his preference was 14, 15, 18 and 20 bores. If these gauges could hold their own with the black powder loads of that day, can they not with the improved ammunition now used? This would seem reasonable, when our game has grown more wary, and snap wing shots are the rule for our usual game birds,—and speed of handling, and aligning count. At still game where careful holding is possible, I personally have found the 16 as effective with any kind of shot I have ever used; i. e., moderate sized pellets,—as the 10 or 12's.

Some time since I was reading from an English journal, the experiments of Holland, and Holland with the 16 and an improved system of boring. The writers say: "At 20



yards we found a more *open* pattern than we would usually find with the 12, while at 40 yards the pattern is *closer* in comparison." Whether this "consumation so devoutly to be wished" has been fully attained, am unable to say, or whether, as the author seems to think, this size best lends itself to this peculiar boring, but it seems to show conclusively that the 16 is as capable of good patterns as its great rivals, 10's and 12's. Summing up its many advantages, it is no marvel that it has so rapidly won its way to the front rank of favor, with the progressive sportsman, and promises to be the coming standard for all 'round work in the years to come. My readers may think it heresy on my part to dispute or question the 12's supremacy, but if smokeless powders, improved methods of loading, have so revolutionized the rifles' caliber, is it not fair to suppose the same results will follow with the shotgun, with the new and improved ammunition? And if the 16 is to be the all 'round gun of the future, what will be the favorite of the expert wing shot, and the gun lover who hunts for rest and recreation, the pleasure of the health giving woods, and to whom the long days' tramp through field and forest means more than overflowing game bags.

I have only to let my eye stray from this page, and I seem to see the answer before me in my own dainty little 20 bore Ithaca, my latest love, with its beautiful lines, the slender tapering tubes, whose dark tint so well harmonizes with light and shade of color in the graceful stock. The artistic design, fine finish, all blend together to make an arm that must be a gun lover's delight. But, says one, admirable as these guns are to look at, they at least lack one great attribute of perfect beauty,—*utility*. Softly, my friend, softly, I was once of your opinion, but as experience still remains the best of teachers, I have had to modify that belief from her lessons. If I may here intrude one of mine. One season, my health not being up to the general standard, I hardly felt equal to the heavy 10 I had used. I ordered a light 20, the result surprised me, the 10 was completely outclassed as a game getter in *my hands*, by it. I attributed it to short barrels discarded the 20, began all over with 8½-pound 12 and after trying all sorts and conditions of artillery, have within two years got around the circle, and am the owner and true lover of the 20. That all the gun cranks that have tested its merits are my rivals, is unqualifiedly true. There is no one gun or rifle, or revolver, that is absolutely best for all uses, and while I think the general consensus of opinion of today will agree with me in placing the 16 at the head of the list as the happy medium, yet I know of no size the fine shot and gunlover can so enjoy as the 20.

I do not think I am a slave to fads or fancies that do not have good and tangible reasons behind them. Have three favorite guns that are unpurchaseable 8½-pound 12 gauge, 6½-pound 16, 5¼-pound 20, and my opinions are largely founded on my experience with these three arms, as they are of very even quality. The 20 shows up as well on long shots on target as the 12. The center of the patterns as deadly, but of course not as wide. With me this is more than offset by light weight, and allows me to regain in my old age something of the speed of youth with the heavy arms I then used.

But it is not the old and slow shot alone that finds this arm suited to his work. The wing shot of today possesses more skill than those in the past, and depends more on centering his birds, than filling the air with a leaden hail and trusting blind dame for results. To such shots the 20 is ideal. And when such houses as Ithaca and Parker and the other great makers recommend them, purchasers need have little fear of their utility. S. D. Barnes, writing on "Small Bore Guns," says: Practical tests have demonstrated that a 20 gauge at 40 yards, using 2½ drams smokeless powder and ⅔ ounce shot, has a velocity in foot seconds something over 8¼ per cent greater than a 12 gauge, 3½ drams, 1½ shot, and velocity counts on swift flying birds and crossing shots." Further the writer claims, that a 26-in. pattern is about that of a cylinder bored 20 at 30 yards, and as a choke bore 12 has about the same, those shooting choke bores need not hesitate to change from 12 to 20. Then follows some tests of a Parker 20 at Palos Park, Illinois, August 29, 1901. The gun 30½-inch barrels, 3-inch shell loaded with 32 grains smokeless powder, ⅔ ounce Latham's chilled shot, at 40 yards, 30-inch circle, the shooting is wonderfully even and close, as reported, 18 shots giving an average of 86.9 per cent. This only shows what is possible with a gun of this caliber. For any general work it would be much too close shooting for the skill of any shot I am acquainted with. If bored for the *work intended* and the *shooter's skill*, I feel sure any one trying it will be more than pleased, and would be loth to part with it. I would not for general work use a longer barrel than 26 inches, and 24 will do the work too. If one has 10, 12 or even 16 think he will find a 20 a great addition to his armory. Have used 28, but found the 20 so superior as to make comparison needless. That in the small calibers for utility the 20 is the limit and final with present ammunition. If any word of mine shall induce a brother sportsman to test this arm and reap the pleasure from the trial I have, then shall not have written in vain.



# Running Deer for Rifle Clubs

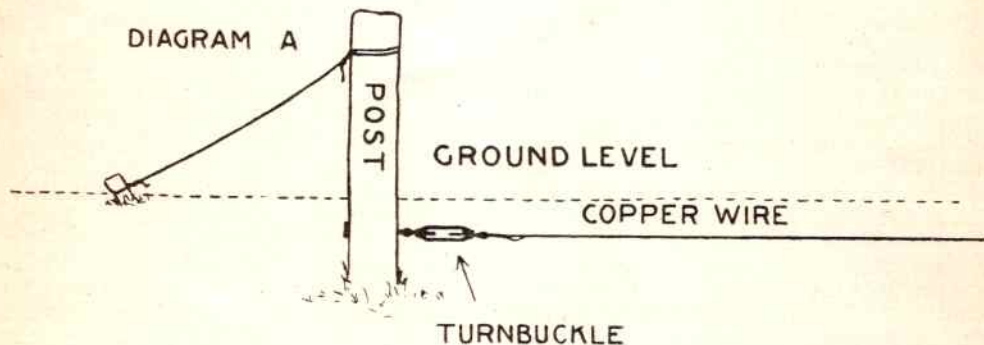
By STEWART EDWARD WHITE

FIRST of all, and to avoid technical criticism, I wish to state that I do not pretend to be an expert rifleman. I have little or no knowledge of the finer phases of target shooting as a game in itself, understand just enough of theory to examine curiously the ballistics of a strange gun, and am absolutely willing to take the other fellow's word—and diagram—for any of the abstruse problems in shooter's dynamics. What I have here to proffer is by way of supplementary suggestion.

The man who has learned to shoot at a target generally has a most discouraging experience when first he enters a field. His progress at the butts has been a series of painfully acquired knowledge of minute things. One by one he has learned the various elements of accuracy,—not to jerk, to concentrate his attention, to squeeze, and all the rest of it. When he faces

Our friend finds his buck and prepares to gather him in. Then he discovers several things: as, for instance, that there is probably not going to be time to go through all the rather elaborate mental preparation customary at the range; that there is no chance to assume the exact position he had found to be steadiest; and above all that said buck does not look as though he intended to remain put long enough to permit the slow increasing trigger-squeeze essential to perfect accuracy. If the deer happens to be moving, the situation is even more acute. Result? Our nimrod aims as well as he can, immediately pulls the trigger—and misses by a foot!

This is not because of buck fever, though it is often ascribed to that malady. It happened because that man had not supplemented the valuable skill gained at the butts, by another kind of skill. He had learned thoroughly that



the distant target he arouses his will power to the careful and earnest accomplishment of these things; so that when at last he releases the bullet, he has gone through a severe course of self-discipline in miniature. That is the reason a prolonged session at target shooting is so tiring.

Consider now this same man in the field. He has practiced conscientiously until he rather fancies himself. At the 500-yard mark he is pretty sure of his seven or eight bulls out of the ten; he makes an occasional 42 or 43 at the 300; and at 200 he is never out of the four-ring. This is not crack work, of course, but it must represent a lot of figuring on causes and effects, a lot of mental discipline, and a lot of practice. With this equipment he goes after big game. We will, for the purposes of discussion, eliminate all nervousness or "buck fever," and confine ourselves to the actual elements of shooting.

if a man would reach the mark he must not flinch, he must pull steadily, and he must stay "on;" but he had not learned how to do these things quickly. When he faced his deer he dropped right back to the beginnings. He jerked the trigger, he anticipated the recoil,—in short, he acted exactly as he would have done before ever he saw a marking disk. Naturally he shot wild.

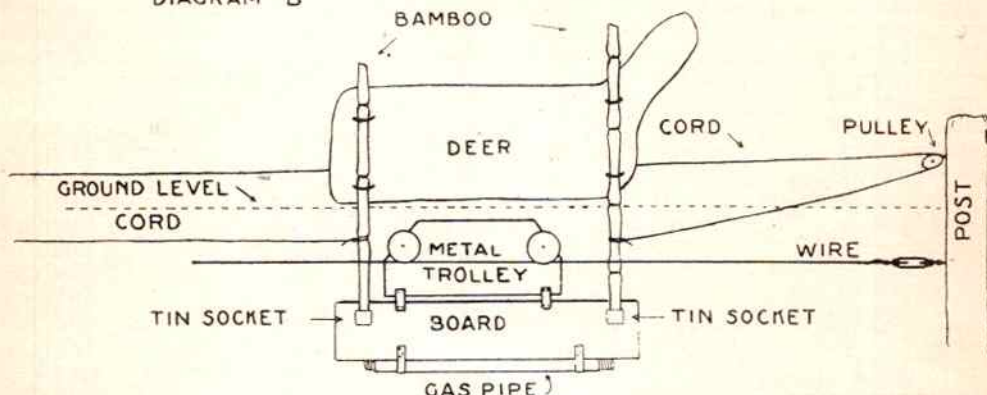
I suppose this is the field history of nine out of ten men brought up strictly to the target game. The fault is not with the target game at all, but with the fact that it stops too soon. A man should not only learn to pull the trigger steadily, but *steadily and instantly*. He should not only learn to "follow through," but to do so instinctively. In short, he should not only realize fully the various elements that go to make up accuracy but he should be able to summon them instinctively and *immediately*.



This lack in deliberate shooting at stated ranges has been recognized, of course. I am only stating acknowledged truisms. Various devices have been adopted. A time limit has been put to a string—rapid firing. The skirmish run has been used. Occasionally a disappearing target has been operated. All have the same object in view; to push the deliberate

true. I have gazed on them myself with considerable awe and respect. The same quality of awe—and also respect—I have been compelled to bestow on sundry wonderful private arsenals wherein were separate rifles for crow, squirrels, bear, deer, sheep, goats and whiffenhoofs. Undoubtedly a dozen rifles or a moving target according to Hoyle are very desirable things to

DIAGRAM B



hang-on-all-day rifleman into a semblance of action. Nevertheless the fact still remains that the overwhelming majority of rifle clubs all over the country are giving the whole of their attention to deliberate fire at fixed distances. Undoubtedly it is a great satisfaction to beat the other fellow out by a point or two; and the game, as such, is as good as another; but it is my belief that the thing is overdone. After a man has reached a certain degree of skill at the regular game, he would do well to divert half his ammunition into other channels. Instead of striving week after week to bring the primary department of skill to a fine-drawn perfection, he would better turn his attention to render instantly available what skill he has.

The moving target is the best method of acquiring this second skill. A man must shoot quickly, else the mark will have passed the limit stake; nevertheless he must pull evenly. If the moment of starting the target is made a little uncertain, and its speed still more uncertain, he must assemble his acquired reactions in the briefest possible time. All the principles he has learned at the butts must here be brought into play; but at once, and not by a slow pumping-up process.

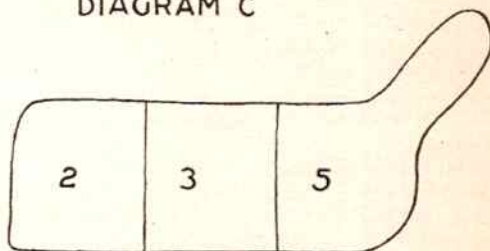
Most practical rifle-club men are willing to acknowledge this; but oppose the difficulty and expense of installing such a target. Now we come to the real point of this article.

If one follows out seriously the blue-prints, plans and specifications made and provided by those high in authority, this is undoubtedly

those who can afford them. But just as most of us sally joyously forth after almost anything with the "same old gun," so we can get the fun and practice of a "running deer" without being a carpenter, a stone mason, and a machine-shop mechanic to make it possible.

The credit of the thing is undoubtedly due to Colby, although the other two of us had a hand in minor details. We three had drifted into target shooting up one of the canons back of

DIAGRAM C



Colby's ranch. All of us were old game shots. Speaking for myself, I had shot a rifle of one sort or another since I was just past seven years old. None of us had ever fired at a regular ringed target at over two hundred yards. Therefore we made a range. You know the sort, the marker retires behind an adjacent hill. We had a good deal of fun pegging away at the three prescribed distances; but after a little we found out just about how good we were.



## The Outer's Book

We knew that on an especially 'on' day we would probably bore out a few more points than on an "off" day; but for the life of us we could not scare up a whole lot of interest in whether it was 40 or 45. About all of them were "close enough in to kill a deer." I know this is rank heresy; but, you see, we were all old game shots.

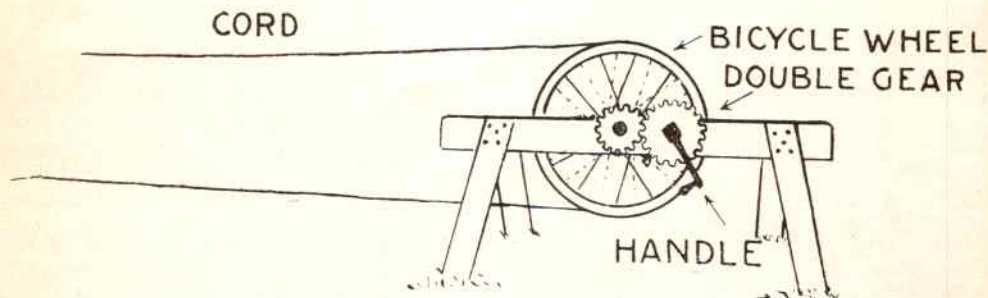
Colby was always experimenting with something new. He erected two poles and strung a telephone wire between them and tried to slide a target down the wire. After that he did other things, until the place was strewn with wreckage. We laughed, and were willing to encourage him. But at last Colby came back with an idea. Then we got our heads together, and, through various failures, worked out the arrangement in detail. You, or any rifle club anywhere, can do the same thing. I advise and urge you to do so. It is a heap of fun and most excellent practice.

body. We cover him with dull brown cartridge paper to make him blend with the landscape, (Diagram C).

So much for the target and its carrier. To slide it back and forth on the copper wire we tried various devices. Finally we ran a cord-line from the bamboo supports through pulleys attached to the posts. We found that if these pulleys were placed a trifle higher than the deer, it helped. At first we used to haul him back and forth by hand. Then we raided the junk pile of a machine shop. Supported by a grind stone frame we installed a bicycle wheel over which the cord passes. This wheel is revolved by two old gear wheels. Thus the operator can take it easy;—also he can hit up that deer's pace, which I firmly claim he does every time I come to bat, (Diagram D).

The course, as I have said, is seventy-five feet long. It runs down hill. At the start it is 135 yards distant, but angles away until it

DIAGRAM D



At either end of a trench seventy-five feet long, thirty inches deep, and a foot wide we planted stout posts, guyed strongly. Below the level of the ditch we bored a hole in each through which we passed a bolt that terminated in a turnbuckle. Between the turnbuckles we stretched a very heavy copper wire, (Diagram A). On the copper wire we hung one of the ordinary cash trolley carriers of the sort used in retail stores to take your modest purchase and cash aloft and back to the cashiers and wrappers. Below the wire, and attached to the trolley arrangement is a flat piece of board loaded with a section of gas pipe by way of keel to keep the arrangement upright, (Diagram B). Tin sockets at either end of this board admit the insertion of bamboo uprights. These latter appear above the surface of the ground, and to them is fastened the deer. This noble animal is of heavy pasteboard. He is a very small deer—hardly a spike buck—and has only a neck and

ends at 150 yards. The deer runs against the background of a brown hill against which one can see his bullets strike. The cartridge paper blends closely with the brown grass, so that the animal, in some lights, is rather difficult to pick out.

After some discussion we divided him into three zones. At first we had some thought of marking off the vital points; but the hitting of a good many vital points, such as the spine far back, would indicate good luck rather than good shooting. Therefore we made it arbitrary. The fore quarters count 5; they are about 14 inches square; the middle counts 3; and the rump shot a disgraceful 2. In our conditions we consider 25 a fair score. It is not entirely satisfactory, but it will do. Anything below that is cause for lamentation; anything above that is all right. The record is 44. The total cost of the arrangement was under \$10.00 and the work.



## The New Savage Lightweight

FULLY one-half of the hundreds of letters received by the Gun and Ammunition Department of the Outer's Book contain requests for information in regard to which would be the better rifle, cartridge, and caliber for a general utility all 'round hunting arm. By this term is meant an arm that will meet the requirements of the average hunter in any locality in which game varying in size from a squirrel to deer or bear may be encountered.

In the old days of big bore black powder arms, the all 'round rifle was often dreamed of by aspiring riflemen but for obvious reasons could never be realized. The difficulties encountered while trying to make a .45-90 do duty as a squirrel rifle were insurmountable, while the results of a shot at a 200-pound buck or a 500-pound bear with a low power small bore did not inspire the hunter with confidence in his weapon or the game with respect for it. The invention of modern high power rifles with energy doubled and caliber reduced nearly one-half, once more revived in the minds of gun men the idea of the ever elusive all 'round rifle. It was thought that the comparatively small caliber of the modern rifle bullet would point the way to a compromise weapon, and indeed it did much to enlarge the field of usefulness for the rifle in all hunting calibers, but more especially in the direction of small game shooting.

The development of practically perfect short ranges and miniature hunting loads, from which most satisfactory results on small game can be expected, comes near solving the problem of the all 'round rifle; and another step forward was gained by the appearance in various forms of the supplemental chamber system of utilizing standard pistol ammunition as a small game getter in the regular high power hunting rifle.

The marvellous ballistic performance of modern rifles, the unmistakable evidence of still further possibilities along that line, the trustworthy reports of their work in the hands of the world's greatest hunters, and the consensus of expert opinion are all convincing indications that except for some special line of work, the caliber of the hunting rifle will not exceed .30 calibers nor fall below .22. This range in caliber narrow as it may seem at first glance, is sufficient to cover the entire field as represented by the game of America.

With the question of caliber narrowed down to but a few hundredths of an inch difference between the elephant and the squirrel rifle,

with light sharp pointed bullets for extreme ranges, heavier full mantled bullets for penetration, soft nosed bullets to give shock and stopping qualities, and the auxiliary and miniature loads for small game and short range shooting; it would seem that the old dream of an all 'round rifle had come true. But not so: Our armorers are still at work.

Reduction of caliber and the concentration possibilities of modern explosives has made it feasible to produce a line of cartridges varying but little in general dimensions except, as to diameter and weight of bullet.

The nearly uniform diameter of the head and the body of certain shells permits the use of cartridges varying widely in caliber and energy, in the same action. The potential possibilities of this feature in a hunting rifle was early anticipated by the alert management of the Savage Arms Company who, with the image of the all 'round hunting rifle ever in mind adopted the only really practical scheme for perfecting such an arm, by making it with interchangeable barrels of different calibers. The action selected for the two-barrel arm is the famous model 1899, originally designed for .303 cartridge. No other make of repeating arm is so easily converted to the take down and interchangeable system. The two-piece stock permits a neat separate forend, easily detachable and as simple and convenient as any found on a high grade double shot gun. The mechanical principle employed to connect barrel and receiver is the interrupted screw, a feature of gun building time proved and almost universally employed in the breech closing systems of heavy ordnance.

It needs but a glance to show any one, the great natural strength of the Savage Take-Down Featherweight. The barrel seat is drilled into the solid high grade steel receiver to the full depth of an inch; the barrel is then turned down leaving a square shoulder an eighth of an inch deep which, when the barrel is stepped into the receiver and given a quarter turn, brings the shoulder under screw pressure of ten powerful square threads tightly up against the end of the receiver. The breech end of the barrel, when in position in the receiver, is re-inforced by a heavy band of steel, 7-16 of an inch thick which, with the massive chamber walls, forms a chamber and breech of exceptional strength.



The fore end is provided with a steel shoe milled to fit the contour of barrel and receiver and like the barrel nests into a circular recess in the receiver, when the fore-end is locked in place. On the inside of the steel shoe a solid wedge shaped key,  $\frac{3}{8}$  of an inch in length and  $\frac{1}{8}$  inch thick, is milled, which engages a slot cut longitudinally in barrel and receiver, locking both together rigidly and in perfect line. The fore-end is fastened to the barrel by a heavy lug of case hardened steel, dovetailed to the under side of the barrel a deep bent cut in the lug is engaged by a wedge shaped piston, also of hardened steel, contained in a tube set in the fore-end and actuated by a spiral spring of sufficient strength to automatically take up all wear in both directions. It is impossible for the Savage take-down system to become loose or get out of line. To remove the fore-end it is only necessary to push the milled thumb lever rearward, and lift small end away from the barrel. No tools of any kind are required to take down or change from one caliber to another, and the proceeding is much simplified by the entire absence of camlevers, tubular magazines, thumb screws or anything projecting or objectionable. For this reason the revolving magazine of the Savage system is a natural adjunct of their excellent take down device and principle of interchangeable caliber. The magazine is in no way connected with the barrel or take-down mechanism, it holds five shells, each in a separate compartment from which they are fed directly into the chamber. With the rotating type of magazine explosions cannot occur by the sudden movement of a column of cartridges placed bullet point to primer, and moved in a body under the pressure of a heavy spiral spring, as in other forms. The magazine of the Savage is located between the points of support when the arm is held in the firing position, therefore the center of gravity is not shifted, nor the balance of the arm disturbed as the magazine is rapidly emptied. The new Savage Featherweight Take-down with 20-inch barrel weighs but  $6\frac{1}{2}$  pounds; its .30-30 or .303 barrel is interchangeable with the .25-35 barrel. The .303, .25-35 is the favored combination as the difference in the weights and size of bullets gives a wide latitude in the game that may be hunted. The Savage armory can furnish four

variations of the .303 and three of the .25-35 cartridge while others may be made at the pleasure of the experimenter. A study of the ballistic performance of the .303 and .25-35 when fired, shows remarkable uniformity in everything except the energy developed, so that when using special sights mounted on the receiver, little or no change of elevation need be made for regular factory loads, at practical hunting ranges. This new and exclusive arm of the Savage Company is equipped with a light, gracefully modeled shotgun stock measuring  $13\frac{1}{4}$  inches in length, with a drop of  $2\frac{1}{2}$  inches at the heel and  $1\frac{3}{4}$  at the comb. Its convenient length over all, its graceful tapering lines and the entire absence of a projecting hammer, bolt-handle, magazine or other unsightly protuberances makes the Savage Interchangeable model a most desirable saddle gun. The extra barrel may be conveniently carried in an auxiliary pocket of the scabbard so that when making extended trips with horse or automobile, the hunter may at all times be appropriately armed for the game to be met with in different localities. Another advantage of the Savage magazine system is that cartridges of varying lengths with bullets loaded, friction tight, may be worked through the magazine without driving the bullets back into the shell, a dangerous condition when shells are reloaded with certain brands of powder requiring an air space. We believe that the Savage idea of interchangeable barrels will be still further extended to embrace even wider variations of caliber and energy, while the veriest novice in the use of fire arms, as well as the seasoned veteran must realize at once the infinite advantages of being able to use a single stock with unvarying dimensions. Doubtless many purchasers of new rifles will be tempted to invest in arms of a superior grade and finish, made to order and carefully fitted to themselves, knowing that the slight expense of a new barrel or caliber, does not mean the perplexities of learning the vagaries of an entirely new arm with radically changed dimensions that might easily cause a heart-breaking miss and the loss of a coveted trophy, perhaps the supreme chance of a lifetime. The Savage quality of material, workmanship and finish is faithfully maintained in the new Interchangeable Featherweight arms.





## Lines for an Automatic

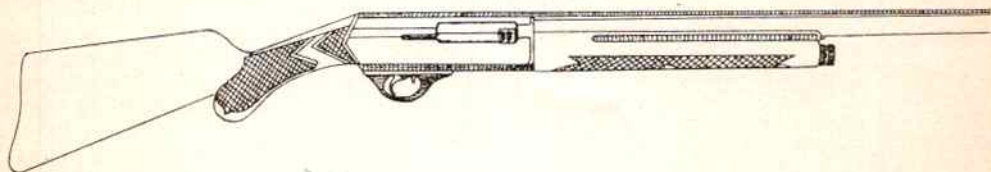
By CHARLES ASKINS

I ENCLOSE herewith a drawing of what I should consider good lines for an automatic shotgun. In order to be adapted to this design the weapon would probably have to be made in the small gauges, 16 and 20 bores, since the size of the frame has been cut down a trifle from that required for a 12, and the fore-end has been reduced considerably. The whole weapon would be lightened from  $7\frac{1}{4}$  to about seven pounds.

The lines of a shotgun might have reference merely to its appearance, no sharp angles or square corners, but flowing and graceful curves would be considered good lines so far as grace and beauty are concerned. Here, however, I have reference to the lines that add to the utility of the piece. If the shooter is to have quick and sure command of his weapon, the

If either hand grips lower or higher than its accustomed position there will at once come a feeling of uncertainty as to where the arm is directed, a feeling that is fatal to quick and accurate shooting.

The automatic is an especially difficult arm to model with correct aiming lines, because of the depth of the frame and the size of fore-arm which must be of such capacity as to contain not only the magazine but a heavy spring as well. Nevertheless in a sixteen or twenty gauge it can be accomplished as shown in the illustration. An automatic built after the design above would equal the heavy, special single shots for clay bird work, with the same handiness afield as the finest double barrel. The sighting plane is long and flat, the grip



grip of his hands must be on a straight line, the one hand no higher than the other, and both only such a distance below the line of sight as will insure them being low enough not to obstruct the vision.

It is generally considered that a gunner aims his piece by raising the stock to his face and then glancing close above the top rib. The position of the hands then would not matter much since the line of aim would be governed entirely by the sight or by the eye. In reality an expert shot doesn't aim in this way, but points his gun by lining up his two hands in the exact direction of the mark. This style of shooting requires that the two hands not only be in line, but they should be practically in line with the bore of the gun as well.

exactly back of the center of recoil, and the fore-end of just such size as to keep the fingers from the hot barrel. The "hang" of the gun would be essentially the same as the Remington Repeater which is second to none in balance and handiness.

The writer is anticipating the time, shortly to be here, when every manufacturer of a repeating shotgun will have an autoloader on the market. He is merely desirous here to call the builders' attention to what the experienced gun-man requires in his favorite weapon. Doubtless another decade will see all our repeaters gradually going out of use to be replaced by the automatic. Rifle and shotgun, the arm of the future must be an auto-loader.

## A Suggestion for a .22 Automatic

I N nearly every issue of the Outer's someone is asking for a .22 automatic pistol, and I notice the demand continues even after the Colts and Smith & Wesson have brought out their new model .22 revolvers. Accordingly when I found Mr. Aaron Parker of Petoskey, Michigan, working along this line I suggested that he give the Outer's readers the benefit of his work. He consented to submit his drawings

even though they were as yet incomplete, his only stipulation being that I do the talking. When he started, his idea was to design a pistol-grip which should be superior to those now in use. In this problem there are two factors involved—the "fit" or conformation to the hand, and the correct angle of grip and barrel. The first of these was obtained in the most practical way possible. Using the lines of



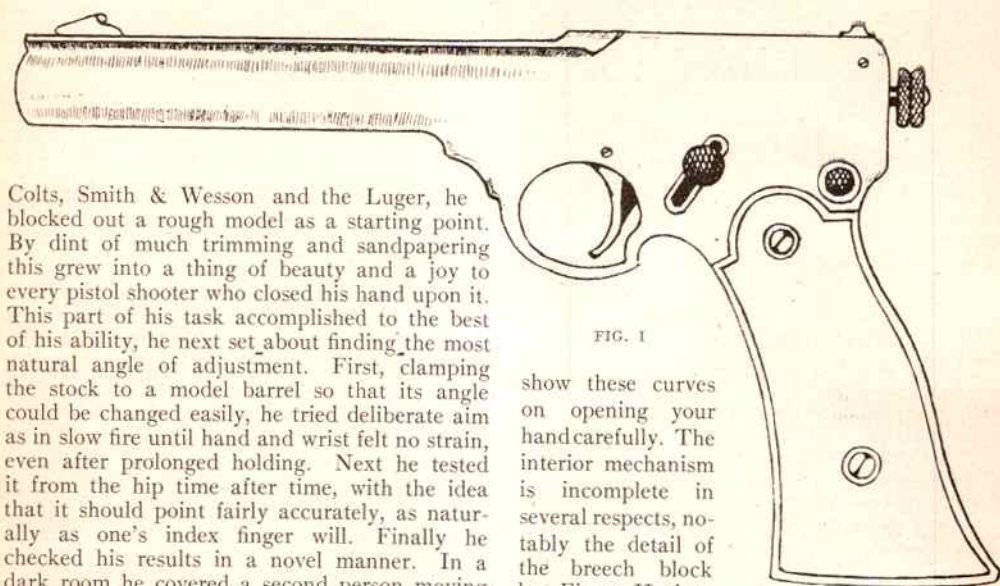


FIG. I

Colts, Smith & Wesson and the Luger, he blocked out a rough model as a starting point. By dint of much trimming and sandpapering this grew into a thing of beauty and a joy to every pistol shooter who closed his hand upon it. This part of his task accomplished to the best of his ability, he next set about finding the most natural angle of adjustment. First, clamping the stock to a model barrel so that its angle could be changed easily, he tried deliberate aim as in slow fire until hand and wrist felt no strain, even after prolonged holding. Next he tested it from the hip time after time, with the idea that it should point fairly accurately, as naturally as one's index finger will. Finally he checked his results in a novel manner. In a dark room he covered a second person moving about at varying distances, turning on the lights to verify his aim.

The outcome of all this was an outer model like Figure I. Whatever criticism the reader may have on the cut, I am sure he would have been as delighted with the feel of it as the local gun cranks who handled it. In fact it pleased a traveling man, who examined it, to such an extent that he borrowed it to show a friend. This seems to have been a more difficult task than he expected for he has not yet returned. Fortunately, Mr. Parker had made drawings of his various models so his work was not lost entirely. There are several points of excellence

show these curves on opening your hand carefully. The interior mechanism is incomplete in several respects, notably the detail of the breech block but Figure II gives enough idea of the possibilities to justify the heading of this article. The action is a combination of ideas probably taken from the Remington and Savage actions. The barrel driven by the recoil, moves in a stationary jacket, and as it returns strips a cartridge from a magazine of conventional type concealed in the butt. Mr. Parker found by experiment that the safety button could be operated much more easily when set at the angle indicated in Figure I, than if it moved either vertically or horizontally. The release button for the magazine, placed on the same side, enables the user to drop an empty clip without changing his grip or using

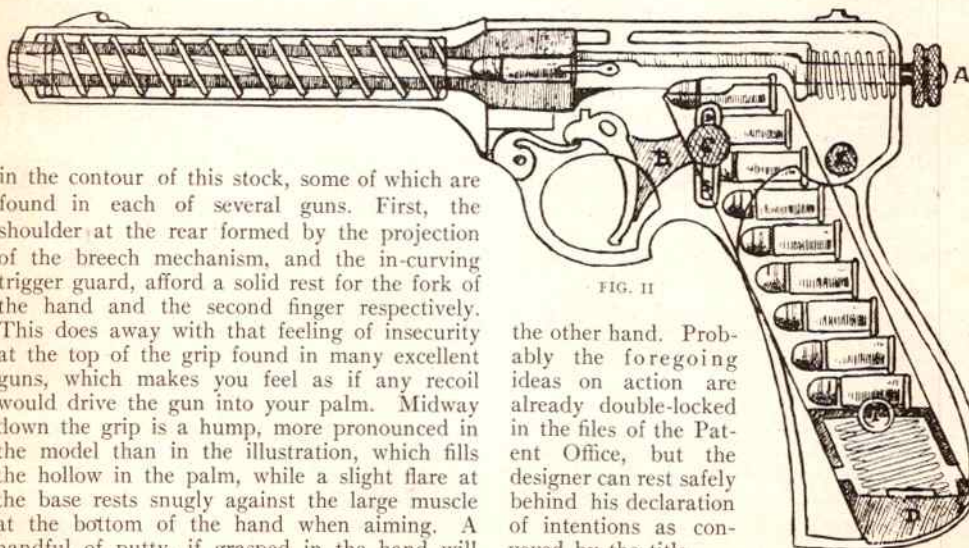


FIG. II

in the contour of this stock, some of which are found in each of several guns. First, the shoulder at the rear formed by the projection of the breech mechanism, and the in-curving trigger guard, afford a solid rest for the fork of the hand and the second finger respectively. This does away with that feeling of insecurity at the top of the grip found in many excellent guns, which makes you feel as if any recoil would drive the gun into your palm. Midway down the grip is a hump, more pronounced in the model than in the illustration, which fills the hollow in the palm, while a slight flare at the base rests snugly against the large muscle at the bottom of the hand when aiming. A handful of putty, if grasped in the hand will

the other hand. Probably the foregoing ideas on action are already double-locked in the files of the Patent Office, but the designer can rest safely behind his declaration of intentions as conveyed by the title.



# Digging Out the Ethiopian

By E. C. CROSSMAN

[Editor's Note—In the October number we permitted Mr. Askins to poke a little fun at Mr. Crossman, knowing that it was good-natured badgering, but a number of bolt-action enthusiasts took it seriously and charged us with not living up to our rule relative to personalities. Mr. Crossman now comes back at Mr. Askins in the same spirit and we print his article because we printed Mr. Askins', but, in self-defense, hereafter we shall decline to permit one writer to mention another's name in debate. If he must refer to the other fellow, he will have to follow the parliamentary practice of calling him "the gentleman from—," "my able opponent," "the distinguished author," or some other euphonious appellation—which will veil the personality].

IN the October issue of the Outer's Book there appeared a collection of two stories and one near-poem, set in a matrix of near-facts, the whole entitled "The Nigger in the Woodpile," and signed by Mr. Chas. Askins. Finding my name mentioned variously in this illustrated story series I have carefully analyzed it to find just what its author is driving at but still remain a little uncertain. Apparently, however, the motive is the Ross rifle and certain questions asked by Mr. Askins, as well as certain strange statements about this arm which were news to me in spite of my somewhat exhaustive analysis of the Ross.

We are led in reading the article, from the Ross to the English makers in general—although the Ross is a Canadian rifle and Ross is Yankee in all his tastes and sympathies. Still following the devious trail of Mr. Askins, we are led through the English makers, to English shotguns, a subject in which Mr. Askins apparently feels more at home than he does with rifles. We are reminded of the yarn of the country doctor, summoned to attend a lad suffering from some ailment that defied the diagnosis of the sawbones.

All his guessing and questioning proving futile, he finally wrote out a prescription and handed it to the mother.

"Here, Mrs. Smith, get this filled and give it to the boy," he said. "That'll throw him into fits and I'm death on fits."

We trust that Mr. Askins, having led us from the rifle subject to that of shotguns feels more at home but the most careful reading of his article fails to demonstrate any explanation for his former statement that the Ross .280 cartridge developed 70,000 pounds breech pressure or that a standard trajectory table was "designed to catch suckers."

We find in the first paragraph of Mr. Askins' article the statement that the Ross has lost some of its peroxide glory—in Mr. Askins' opinion

although he fails to state this. We also learn that "Sir Edward" makes excuse for constructing an arm that can "only be dismounted with difficulty." We are still in doubt as to the gentleman's meaning. Had he said that the arm could be dismounted *only with difficulty* we would take him to mean that the taking down of the rifle is attended at all times with trouble, but his statement reads that the dismounting is the only part of the manipulation of the rifle that is difficult, the other functions being attended with perfect ease. This is quite true.

It might not be unreasonable to ask the gentlemen to stick within hailing distance of facts in this discussion. Else we wander in a boundless wordy desert without even the landmarks of what the other fellow really said to guide us to our destinations.

"Seriously the Ross has but two objections that can be considered at all. . . . The other is the comparative inaccessibility of parts."

"The writer would prefer being able to get at the magazine a little more readily in case too much gravel and limbs and whatnot gathered therein."

These two sentences constitute what Mr. Askins is pleased to term "making excuses" when in reality they would appear to the average man to constitute criticisms of the arm, to point out weak points which should be remedied instead of making excuses for the fault.

Just why Mr. Crossman is in any predicament is rather hard to determine. The gentleman at the request of the Outer's Book secured a Ross rifle and analyzed it pretty thoroughly, pointing out its good and its bad points, as he has done with many other rifles to the best of his ability. Not owning any stock in the Ross factory, not being interested in the selling line of the Ross company and owing the Ross Company no money it is hard to understand just why an outsider who fancies a certain make of rifle is in a predicament when he himself points



out certain points that should be improved. This constitutes a valuable line of indication as to Mr. Askins' experience in criticising various makes of shotguns. Apparently some of the makers must have taken umbrage at his criticisms, although why he should care is hard to see. Is it possible that the woodpile shelters yet another darkey?

Mr. Askins states that the bolt action rifles have had their day, also that they were never more than an European makeshift as a sporting weapon. Further no other war will ever be fought with them and the soldiers of the world are on the last hike to the junk heap with them at present.

This is an example of the danger Dr. Hudson pointed out with Mr. Linkletter's theories—that the fallacies were so sandwiched in with the truth as to make the careless reader swallow the whole mess as the truth.

The writer, having placed himself on record in *Arms and The Man* as stating that four years should see the last of our New Springfield for the use of our troops, agrees with Mr. Askins on the nearness of the auto-loader for military use. But the fact that the best of the hand functioned arms is in danger of being sent to the discard by a more efficient arm as far as speed of fire is concerned by no means proves that the same arm will supplant our sporting rifles at the same time. A glimpse at the models of the most up to date military automatics will serve to illustrate why the sportsman will be using his trim Mannlicher or Mauser or Ross long after our troops have been equipped with the fearsome combination of "guts" and hideous outline that constitutes the military automatic.

I note that the military rifle of the bolt persuasion was never more than an European makeshift when made in sporting form. These rifles have been used for the past twenty-five years and their sales are larger now than at any previous time. Also the users of these "make-shifts" have had ample opportunity to purchase the splendid, simple and strong lever action as turned out by the American makers but for some reason stick to their old "stopgaps." Strangely enough, our foremost rifleman from both the military and sporting standpoint, Lieutenant Townsend Whelen, prefers the bolt action rifle to any other. This is not through his being a military man and therefore more familiar with the military rifle. He used the lever action years before entering the army and was perfectly at home with this arm.

As to his opinion of the rifles now made for sporting use, he writes regarding his made-over New Springfield—of the bolt persuasion be it noted—"The finest rifle I have ever laid eyes upon and I am at last satisfied."

It is also worthy of note that our worthy ex-president used one bolt action rifle, one

lever action and one double rifle—the latter made by these boastful English makers who have so aroused Mr. Askins' ire. That is one-third of his arsenal was of American private factory make and his weapons did not include an example of the type which Mr. Askins says is to drive the bolt action out of the hands of both the soldier and the sportsman.

It is further noteworthy that Stewart Edward White, just started on a six months' big game trip in Africa, took a converted New Springfield in the production of which the writer had the honor to have a part and one of the double express rifles of the abused English riflemakers. Again Mr. White omitted to take along one of the auto-loading type of rifle.

"We understand that Mr. Ross claims for his rifle that it shoots without metallic fouling, etc."

Dr. W. G. Hudson of New York, puts himself on record in print to the effect that the Ross does all its inventor claims. Therefore no insinuations from Mr. Askins can alter the facts in the case.

Rifles of high velocity breed ordinarily do vary when shot from the different positions, a fact which Mr. Askins' shotgun experimenting apparently has not demonstrated. It is not surprising to find the Ross behaving like other arms in this respect.

Mr. Askins expresses it as his opinion—from having watched the idiosyncracies of bird shot for many years—that shooting from the different positions with the Ross will cause the bullets to vary to an almost fatal extent—by fatal not meaning to the game.

To settle this trouble in Mr. Askins' mind, I will cheerfully undertake to make these tests if the gentleman will specify what sort of tree the victim shall place his back against in one of the tests. I have never got around to the tree stage yet although I have fired a good many thousand rounds of ammunition. I therefore don't know whether a difference in trees would alter the strike of the bullet or not. A pine might possibly give less resistance to the unfortunate's back than an oak and thus cause the bullet to strike several inches higher at steen thousand yards.

I note that I am invited to prove that the Ross will shoot four shots out of five into a bushel basket or other similar sized receptacle at 100 yards if the position of the shooter be changed. Inasmuch as the positions used by infantry in a so-called normal attack vary from the prone to the off-hand with kneeling and sitting sandwiched in according to the ground shot over, and as the infantry rifle is the New Springfield, I think we can safely take it that the Ross will not fall outside the pale of practical accuracy with its ballistics so close to the Springfield.



It is to be expected that if one holds a rifle off-hand as does the writer, loosely, with no great resistance to the heavy recoil and then gets down prone and chokes down the long barrel with a heavy grip on the sling, the shots will vary slightly over the same range—as they do. With the rifle gripped firmly off-hand and the sling not used in a hurried shot prone, I think that even an expert rifleman of Mr. Askins' class will not be disappointed at the results.

I note that Mr. Askins is not pleased with the English shooting books he secured on the advice of the writer. Also that one of them, presumably "Modern Sporting Gunnery," by Henry Sharp, is an advertising fake pure and simple because it devotes most of its attention to the guns of one maker. Admitted, this particular book does just this, but if a rifle or gun crank cannot get \$2.00 worth of good out of its splendid tables, good illustrations and general information outside the puffing of one particular make, he should patronize the public library and save his money. "The Gun and Its Development," by Greener, an English gun maker, has been our standard shotgun book for thirty years and it is now in its ninth edition. The writer owns both this late edition and the fourth, printed in 1888, a book that gravely tells the Nimrod where to leave the Union Pacific to get the best buffalo shooting in Kansas.

In spite of this book making invidious comparisons between Greener and other guns throughout the book, no reasonable amount of money could separate the writer from these two books were no others available.

However, for Mr. Askins' information, I refer him to such volumes as "The Rifle" by Freemantle, the most complete book ever written on the subject and without a rival among American books. Or Tippins' book, another standard volume. Or "A Century of Guns" by Blanch, for the various types. Personally I prefer Henry Sharp's book in spite of its one-sidedness and once having the idea that he was hired by Westley Richards firmly in one's mind, it would be a *rara avis* who could not find many evenings' enjoyment and information in its pages.

In fact the rankest fake among the English shooting books is one puffing no make of gun, being devoted mainly to puffing its author. This is the "Sporting Rifle" by Walter Winans, the author of which should be arrested for taking real money for it.

I note that neither the offending book by Sharp nor the English catalogues are intended for English consumption but for Americans.

A rather startling statement in view of the fact that probably 100 copies per year of each maker's catalogue go across the Atlantic. I would like to inquire for whom the American makers' catalogues are intended then as I find in them statements even worse than the most blatant of the English makers—and we must have a limit somewhere to our swallowing powers.

I note that in me a man is found unable to perceive good in American products but who sees a wonderful superiority in foreign makes of guns, ammunition, etc. Comment on this statement is unnecessary. It is in full accord with the ignorance that is responsible for defining a standard trajectory chart as an attempt to catch suckers or in misreading the Ross pressure figures when they were given in the clear print of the Outer's Book.

If the gentleman is ignorant of the fact that the English gun makers lead the world in the production of fine double shotguns and double rifles and that further, English shooting literature is as complete as our own is faulty, then we have a fair measure of his ability to comment on shooting subjects.

Mr. Askins suggests that there is somewhere a nigger in the woodpile in the writer's having taken it upon himself to point what is good in European products and what he considers faults in many of the products of American armors. This is of course unpatriotic in that it might hurt sales of tariff protected American makers when their products are compared with those of European makers turned out for the same money.

However in the notions of those whose thoughts ever run in such channels, there must be a nigger in the woodpile in so departing from our former patriotic groove—in other words the nigger must be that all the European makers from those handling telescopes down to the hundreds of makers of rifles and shotguns have formed a gigantic league to introduce their goods in this country and have employed the writer as a mouthpiece. In view of the loudly voiced patriotic sentiments of Mr. Askins, shown many times in his shotgun articles, it is a case of league against league. I trust the American organization is satisfied with its representative.

We are told that when the squid is finally chased into a corner by its foes, it emits a curious inky fluid that clouds the water and permits it to escape while the foes aforesaid are groping through it.

Talking about patriotic motives and the sinful English makers is all very interesting but how about that 70,000 pounds Ross breech pressure and that sucker catching table, dropped so promptly by Mr. Askins?



## Answers to Correspondents

### SIGHTING FOR SNAP SHOOTING

EDITOR GUN DEPARTMENT: Please let me know if you require the sights on your .22 rifle to be adjusted a little bit different for aerial shooting at small objects such as pennies, etc.?

Now if you had them just right for a  $\frac{1}{4}$ -inch mark at say 15 feet; that is, I mean that they to be so that if you would hold on (not under) that the bullets would punch it out, why would not that be alright to start on hitting pennies in the air at 15 feet, providing you would hold just under?

Do you keep both eyes open when shooting at such a small mark as a  $\frac{3}{8}$ -inch bull at 25 yards? I have had some difficulty in shooting at real small marks with both eyes open; that is, when the sight is larger than the mark. Of course, when the object is larger than the front sight I never think of closing one eye. This is at stationary shooting.

Do you hold the pistol the same at things thrown in the air as you do the rifle? I sometimes think one should hold more under. I have just bought a new Remington .22 repeater. Is there any difference in the shooting of two .22 rifles when you take a .22 ball and put it in the barrel of one that shows twice as much light when you hold it against the lamp. This is what I got when I compared two different .22 caliber rifles. I am very much interested in .22 rifle and pistol shooting and will thank you very much if you will put me right on the above questions. Yours,

C. SHUFF.

[In sighting rifles of any caliber for aerial work, such as snap shooting at pennies, small marbles, etc., it is my method to sight the rifle perfectly level—that is, I use a front sight just high enough to permit the line of sight to clear the top of the frame or receiver of the rifle. If the barrel is tapered to the muzzle, the front sight must be of such height as will compensate for the taper of the barrel. The regular factory sights, or the special sight as adapted to each make or model of rifle will do this. If your rifle is sighted properly for a  $\frac{1}{4}$ -inch object at a range of 15 feet, the line of sight should strike the lower edge of the spot and the bullet, the dead center. In this way the object is in full view when shot at. It is plain that in order to hit an object one must see it. With your rifle sighted in this way, no change of sighting is necessary up to the limit of distances at which

one may reasonably expect to hit such small objects, assuming of course that they are hit when apparently stationary as they turn in the air. If the object is descending one must hold below, a distance proportionate to the speed of the falling object. The same method of sighting and holding applies to the single shot pistol or revolver.

My method of shooting with any kind of arm is binocular—that is, both eyes open, and this too regardless of whether the rear sight is an open or peep. When using the pistol for aerial shooting at objects as large as common apples, wooden balls as large as a base ball, or at blue rock targets, I hold the pistol at arm's length at my side until the object is in the air, then swing the arm naturally and quickly upward until the pistol barrel with sights aligned, intercepts the line of sight. The trigger should not be too light as to ensure accurate work, the trigger and trigger finger should always be in contact. My system with the rifle is to hold the stock of the rifle at the point of the hip near the belt line until the target is well in the air. These methods are more practical than to hold the weapons continually in an aiming position, as most professional shooters do. The skill acquired by these methods is always available in the hunting field.

The new Remington .22 caliber rifle is a most desirable arm for snap shooting, or for any other service. The Winchester model 1890, chambered for a .22 short only, is the one I have used most. For snap shooting I prefer an arm chambered for one length of cartridge only; the .22 short is heavy enough to do the work and gives one less expensive practice. With regard to the fit of the ball, I am of the opinion that there is little difference in the results obtained, as with bullets of pure lead the upset always takes place near the chamber and all are expanded to a uniform fit. When using open sights for aerial work, my selection is a low flat bar the width of the upper surface of the octagon barrel. The bar may have a very shallow notch to mark the center, but I prefer it without any. The front sight, a small ivory or gold bead—the latter preferred—only the bead to show above the flat bar when sighted level. Most of my rifles for aerial work are sighted with a small gold bead front sight and a rear combination peep Lyman or Marble with a large aperture. Two of my rifles, which I have used with great success for wing shooting



at live game, are sighted as above, but with the Marble Flexible special base sight. This gives a very long sighting plane which is a great advantage in making long shots at running or flying game. I think I have covered all your questions, but if I can help you further, come again.—R. A. K.]

### FOR DEER HUNTING

EDITOR GUN DEPARTMENT: I have been reading your excellent magazine for some time and have learned much from its pages. Until about a year ago I lived in Michigan and I expect to go back again very soon. When I do I want to take along a good rifle. What caliber would you advise me to get? I think either a .30-30, .32 Winchester Special, or .303 Savage would be about the right gun for such game as deer, bear, etc. Which of these guns is the most powerful. Yours truly,

A. O. S.

[Any one of the three cartridges mentioned will do good work on the game to be found in Michigan or Wisconsin. The .32 special is faster, has equal striking energy and a slightly flatter trajectory than the .30-30 or the .303 Savage. They compare about as follows: The .30-30-170, velocity 2020 foot seconds, muzzle energy 1540 foot pounds. The .303 Savage 195-grain bullet, velocity 1952 foot seconds, muzzle energy 1658 foot pounds. The .32 Winchester special 165-grain bullet, velocity 2111 foot seconds, muzzle energy 1633 foot pounds. A choice of either the .32 special, or the .303 Savage would give you a better hunting cartridge than the .30-30 on account of greater shocking power. As between the .32 Winchester special and the .303 Savage, I am of the opinion that the latter would give the best results within average hunting ranges. You can make no mistake in buying either cartridge, or the rifles for which they are made.—R. A. K.]

### THE 20 GAUGE GUN

EDITOR GUN DEPARTMENT: I would be obliged if Mr. Kane or some other well informed gun man will inform me through the columns of the Outer's Book, if the regulation charge of powder and shot for a 20-gauge gun is more powerful and more satisfactory in a 20-gauge than the same charge would be in a 16 or 12-gauge. If so, what is the reason for it?

An article was published a few months ago in one of the sporting magazines describing a gun which the writer of the article was having built. As I remember, it was a 20-gauge with 32-inch barrels chambered for 3-inch shells, and was to weigh 7½ pounds or more. The charge of powder and shot which the owner intended to

use being as heavy as that of a 16-gauge, or a light 12-gauge. I would like to know the advantage, if any, that such a gun would have over a 12-gauge gun in range, accuracy or any other particular. Yours very truly,

W. E. O.

[The consensus of opinion among those who have given the subject sufficient study and attention to warrant definite opinions, is that the regular charge of powder, shot, and wadding for a 20-gauge gun will give better results as to range pattern and penetration if fired from a 20-gauge gun than if fired from 16 or 12-gauge gun, assuming of course that barrels of the guns are the same length and bored alike. The reason for this is the greater concentration of the smaller bores and reduced area offered to the air. The atmospheric pressure increases in proportion to the size of the bore.

To further illustrate this idea, suppose we fire the 20-gauge load from a 4-gauge gun. It would be apparent at once that there is a rapid falling off of range, velocity and penetration. The only advantage to be gained by the use of a large gauge gun is the greater density of pattern and to secure this, loads proportioned to the weight and gauge of the gun should be used. The gun weighing 7½ pounds, with a 32-inch barrel, full choke, and chambered for a 3-inch shell as described in your letter, represents about the limit for effective performance in that gauge. The object of using the long shell is to give more powder depth, so that heavier charges may be used, thereby increasing velocity. The long shell also permits heavier wadding, which not only develops greater chamber pressure by confining the powder, but by the use of deep, springy wadding the shot pattern may be visibly improved.

No doubt a 12-gauge proportioned in every way as is the 20-gauge above mentioned, and loaded with such loads as the increase of weight and gauge would warrant, would outshoot the 20-gauge, but for general shooting it is doubtful if the average man could do as good work as with the lighter gun and loads. I am of the opinion that if confined to one gun a 12-gauge would be best as the denser pattern would be the more deadly. An expert shot, however, would be but slightly handicapped by the difference in gauge if the weight of the 20, 16 and 12 were about equal. The load of every gun should be proportioned to its weight, the work expected of it and the shooter's ability to handle it.—R. A. K.]

### AN AUXILIARY RIFLE BARREL

EDITOR GUN DEPARTMENT: Do you know where one could purchase an auxiliary rifle barrel, .32-40 caliber, to slip into a 12 gauge shotgun barrel, thus making a combined rifle and shotgun of a double barrel.



I have read of these but have never seen one, do you consider them practical and accurate at short and medium range? I mean accurate enough to make an 8-inch group at 100 yards.

Could one get fairly good results at short range with shotgun sighted with Lyman sights? Yours,  
HARRY W. CRAFTS.

[The auxiliary barrels, as described by you, were formerly made by the Remington Arms Company of Ilion, N. Y. The company is now owned by M. Hartley Company, 299-301 Broadway, New York City. It is possible that they, or some of their agents, may still have some of the auxiliary barrels in stock. I used one, a .44 caliber, when a boy, and found it a very practical and convenient device and very accurate. It was secured in the muzzle by an expanding nut while the breech end fitted snugly into the shell chamber. The barrel gave excellent results from 150 to 200 yards. The double sights as used on a trap gun could easily be made to answer if you can obtain the barrel. Should you fail to get one from the Remington Company, try Francis Bannerman, No. 501 Broadway, New York, or Hibbard, Spencer & Bartlett, Chicago.—R. A. K.]

#### CROSSMAN CALLS A HALT

EDITOR GUN DEPARTMENT: I am sorry to do it but I really have to beg off.

The article on the Sporter Springfield is in print to the extent of the first installment and I have already received one and a half pecks of letters on the subject. I suppose I should be tickled that so much interest is taken in this sort of gun and I am, but unfortunately I have to work part of the time much as I would like to correspond with other cranks.

Some of 'em enclosed postage. Most of 'em didn't. Stamps are pretty cheap at the prevailing rate of two cents, but when the stamp clerk at the post office asks you if you are running a mail order house, it gets on your nerves.

They wanted to know the price of the gun, the price of the stock, how the stock was fastened on, the list of the parts required and a little about everything else on the gun. Some of them calmly requested that I obtain the parts from the Government for them.

Now this is all right and perfectly natural, but when the parts from the Government include some 40 or 50 pieces which must be listed in detail, a dozen such inquiries makes you begin to repeat the list backwards in your sleep. And as the sale of Government parts is prohibited to others than those members of N. R. A. clubs, aside from the trouble that is entailed in ordering these parts of the rifle, I have been obliged to regretfully decline all such opportunities to work up trade for Uncle Sam.

I have gone into the makeup of the rifle pretty thoroughly in the Outer's Book and have today turned over to Wundhammer of this city and to Adolph of Rochester, any details that I thought could help them. Both of them are familiar with the details of the rifle, both of them splendid workmen and both of them able to answer all questions about the sporting Springfield. Adolph is now at work on one of these rifles on the same lines as those we made up, but with engraved magazine floor plate, engraved guard, engraved receiver and engraved barrel. This is for Lieut. Whelen.

Therefore, if inquirers will kindly address their queries to Fred. Adolph, 10 Ariel Park, Rochester, N. Y., or to Ludwig Wundhammer, Bullard Block, Los Angeles, Cal., they will obtain entire satisfaction and I will be relieved from the job of gunmaker which I did not undertake and for which I am not fitted.

I have answered quite a number of letters on other subjects and am always glad to pass out any near-information I am able to do on the subject we are interested in but the next fellow who says sporting Springfield to me will either get licked, lick me or be a better runner than I am.

EDWARD C. CROSSMAN.

#### PETERS CARTRIDGES WILL WORK

EDITOR GUN DEPARTMENT: This little weapon has now been upon the market several months and, contrary to the predictions of many, has proven its worth in the hands of thousands of appreciative shooters.

Having had considerable to do with the various stages leading up to its production, I naturally feel more than a passing interest in the case. If the reader will look up "Arms and The Man" of April 22, 1909, he will see the story, with illustrations, which brought a flood of letters to the writer and the "Colt People": letters with joy and approval for the start that had been made. Letters showing the feeling of joy at the prospect of obtaining the weapon of their life-long dreams, as many expressed it. These things had the necessary bearing to induce a *good company* to bring out a *most elegant little weapon*, along the lines suggested by the dreams of these patient cranks.

Now we have the little weapon and it is only necessary to learn to hold, to handle and to shoot it.

In Mr. Best's article, I see that he only mentions the Winchester and the U. M. C. make of ammunition. Now, with due regards for these great companies and their excellent cartridges, I would like very much to have Mr. Best make a test with the "Peters" product. Since receiving my own Colt .22 I have fired several hundred "Peters" caliber .22 W. R. F. cartridges through



it, and have not yet had an occasion to notice the slightest inconvenience as to extraction or the revolving of the cylinder with either the semi-smokeless or the smokeless powder cartridges. A party of friends of mine at Hart, California, over on the desert, great pistol cranks too, to whom I sold five or six of these little weapons, have discarded all other brands for the Peters.

I still use my remodeled Colt, allowing my wife the use of the new weapon. In our jaunts over the country she handles the little weapon alone and never yet have I heard her complain about any trouble with extraction or the revolving of the cylinder. Yours truly,

WILL A. WRIGHT.

### AN ALL AROUND RIFLE

EDITOR GUN DEPARTMENT: Wishing to purchase a rifle that I could use for big game hunting as well as for good target practice, I would highly appreciate your opinion as to a good all around caliber. I favor the .38-55 and the .33 Winchester but have little faith in the .30-30 for hunting purposes. What would you recommend? Respectfully,

FRANK PAULINS.

[It is extremely difficult to combine all the desirable features of a target rifle and a big game rifle in one arm. The .30-30 is a good hunting cartridge for medium sized game, such as deer and black bear. The .33 Winchester cartridge is considered better for hunting purposes, but neither cartridge, although both are very accurate are adapted to target work. The .38-55 is in about the same class as a game cartridge, but better for target purposes, as it is more easily reloadable.

I think the .32-40 cartridge would be preferable for an all around rifle for the following reasons: It requires only a 16-inch twist and with a smokeless steel barrel, full loads of high power smokeless powder with full or half mantle bullets, as well as the black powder loads, may be used giving a difference of 600 feet muzzle velocity. It is conceded that the .32-40 is the best target cartridge yet developed, and when loaded as a high power smokeless cartridge, it takes rank with the .30-30, the .32 special, the .33 Winchester and others of that class. The .38-55 is also a good all around cartridge, ranking close to the .32-40 in ballistic performance, but not as pleasant to shoot at target.

I, of course, do not wish to influence you in your choice of a rifle, but would say that the Savage action is admirably adapted to the many requirements of an all around rifle. The revolving system of the magazine permits the use of cartridges with bullets seated friction tight, which is a great advantage to the target shooter who wishes to use bullets of varying lengths

and weights. It may also be had in take-down style, which permits of wiping and examination of the barrel from the breech, or it can be had with interchangeable barrels in various combinations, such as the .303 or .30-30 barrel, interchangeable with the .25-35. As between the .33 Winchester and the .38-55 cartridges for target and big game, if you wish to reload your shells, I would recommend the .38-55. If you intend to use factory ammunition, the .33 would be my choice. It is an excellent game gun and very accurate as a target arm, but not so well adapted for reloading—R. A. K.]

### THE SALE OF KRAG RIFLES

EDITOR GUN DEPARTMENT: The Chief of Ordnance, U. S. Army, has set aside a certain number of model 1898 "Krag" rifles for sale to members of the National Rifle Association of America and its affiliated clubs at a price of ten dollars, to which should be added \$1.15 for the packing case and twenty-five cents for appendages. These rifles are new and will be selected as far as practicable so that they will be an ideal target rifle.

These rifles may be ordered in the regular way through the Adjutant General of the state in which the member resides, the requisition to be accompanied by a certificate from the Secretary of the National Rifle Association.

All requisitions should be sent to the Commanding Officer of the Springfield Armory.

Authorized by a letter from the Chief of Ordnance, U. S. Army, dated October 22, 1910.

Yours,  
ALBERT S. JONES, Sec'y.  
National Rifle Association of Am.

### FOUND PETERS SATISFACTORY

EDITOR GUN DEPARTMENT: Referring to the article entitled "Some Colt .22 tests" in the November Outer's Book, I would like to say that after firing about seventy-five shots using smokeless powder cartridges, with indifferent results as to accuracy, and with ejector troubles similar to those mentioned in the article above referred to, I began using Peters ammunition loaded with King's semi-smokeless powder. The results have been all that I could hope for, as I have shot as many as 100 times without any cleaning of the weapon, and the last shots seemed to be as well placed on the target as the first of the series, while I could notice no difference in the force required to eject the empty shells at any time; the pressure of the thumb being sufficient. With the Peters ammunition I have had no difficulty using the arm as a double action revolver in rapid firing. Yours truly,

ORRIN E. STANLEY.





## WITH BAIT AND FLY

EDITED BY O. W. SMITH



This department is conducted with the express purpose of aiding fishermen, and to help them aid one another. To that end communications are invited upon subjects pertinent to implements and methods of the craft. Any disciple of Sir Isaac will be given an opportunity to express his views, providing he uses the language of a sportsman, and *does not indulge in personalities*. It is understood that each article is published upon its own merits, and the publication of an article does not signify that the editor is in accord with the views expressed.

## Some Familiar Fish

### No. 12. COMMON SUNFISH

(*Eupomotis gibbosus*)

WHAT angler does not remember his first "pumpkin-seed?" Though we make sport of the little fellow, yet our hearts beat a wee bit faster when we see a bare-footed boy trudging wearily down the street holding in his hand a willow wand upon which are strung a dozen or so of the golden fish. Golden fish and golden days! No wonder the poet exclaims,

"Turn backward, turn backward,  
Oh, time in your flight,  
Make me a child again,  
Just for tonight."

When *gibbosus* seizes the hook of your true angler, who is fishing for larger members of the finny tribe, he tenderly unhooks the little fellow and returns him to the water, while a look of tender reminiscence o'erspreads his countenance. The man who heartlessly kills every small fish that takes his hook, is not, and never has been a disciple of Sir Isaac, and is undeserving the respect of true anglers.

As was right and proper, Linnaeus, the great naturalist, named the sunfish, giving it the specific name of "*gibbosus*" because of its round or "gibbous" form; that was in the year 1758, the year that young Washington led the little army against Fort Duquesne. Linnaeus' specimens came from somewhere in South Carolina, for the fish is of quite wide distribution; being found along the Atlantic seaboard from the Pine Tree State to Florida, in the Great Lakes region, and in the northern half of the Mississippi Valley. In the latter part of its range it is

seldom found south of Iowa, and is said to be somewhat rare south of Virginia on the Atlantic Seaboard. In central and northern Wisconsin it is very abundant, shallow lakes fairly teeming with it, and is much sought after by women and children; not to mention the occasional angler who seeks it because of its great beauty or "for auld lang syne."

One of the familiar names by which the fish is known is "pumpkin-seed," and in shape it is not unlike the seed of America's great "pie fruit." The mouth is even smaller than that of the blue gill, but in spite of that fact the sunfish will manage to bite a large hook if it is baited with an angle worm. In color the fish rivals the coral fish of the south seas. Even the lordly brook trout is not more beautiful. The back is bluish, sometimes with purple reflections, and again appearing greenish-olive; the sides are a lighter shade, spotted and blotched with a rich orange; and the belly is a bright orange-yellow, sometimes gleaming like gold. The cheeks are deep orange, crossed with wavy blue streaks, which give them a zebra-like appearance. Lower fins are yellow, while the dorsal fin is blue and yellow. The ear flap is a rich velvet black, splashed with red on the lower side, a mark which always appears in adult fish, serving to distinguish it from all other bright colored members of the family. The angler should remember that *gibbosus* alone is possessed of the decorated iris.

Its habits of nest-making, care of eggs and fry are like those of the other sunfish mentioned.

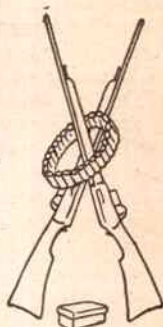




## GUNS AND AMMUNITION

EDITED BY ROBERT A. KANE

This department is intended to be a place for the exchange and discussion of views on any subject pertaining to arms and ammunition, from which no one with an idea to advance shall be barred. The only conditions are that the opinion must not be manifestly absurd, that it be expressed in courteous language and that no personalities be indulged in. Each opinion is printed for what it is worth and its publication does not commit the editor to the view expressed. The widest range will be permitted and our readers are invited to make free use of these pages, but it is important to remember that *under no circumstances will personalities ever be permitted.*



# The Flight of the Modern Bullet and the Wound It Makes

By DR. A. HOYT

Professor of Physics in the University of North Dakota

THE history and science of the development of the various weapons which have made man the supreme animal form an intensely interesting study for the anthropologist, the physicist, the physician, the military man, and last but not least, for the out-of-doors man, whether he use his weapons for the chase, or is a shooter because practice in that art appeals to him as should any other good clean sport.

It is not my purpose to enter into a mathematical treatment of the motion of projectiles, nor am I able to use with fluency the line of jaw-breaking names by means of which the learned surgeon explains what is the matter with a man who has gotten in the way of a cannon-ball.

Owing to the widely differing concepts, preconceived ideas, and erroneous impressions prevalent among most people who have given the matter any thought, it will be necessary for me to carefully define certain expressions which would otherwise seem very technical to the uninitiated. Moreover, owing to the wide scope of the field, I shall limit my remarks to small caliber projectiles, and more especially to rifle and pistol bullets.

In the first place, every projectile has two motions, each of which produces its own effect independently of the other. This is demonstrated by a very simple experiment. If a marble is shot horizontally off the end of a table at the same time that another marble is dropped straight down from the end of the table, they will both reach the floor at the same time.

This means that the fall of the marble occurs in exactly the same way whether it has a horizontal velocity or not. It means that if you stand on the shore of a lake and fire your rifle in a horizontal position that the bullet will strike the water in exactly the same time that it will if dropped freely from the same level as the end of the rifle. There is a very slight deviation from this law for an elongated projectile, this being due to certain peculiar motions caused by the spinning of the bullet about its axis. This deviation is so small that no ordinary experiment would detect it. In other words, the bullet continually falls as it flies, causing the path to be curved, or parabolic.

The motion of a falling body is not a uniform one, but one of rapidly increasing velocity, so that a bullet drops much more rapidly at the end of its flight than at the beginning. Then, too, the effect of the air resistance is to make the time required for a given flight longer, which also gives more opportunity for the bullet to drop. The net result is that the latter part of a long flight is very much more curved than the beginning. Contrary to the current impression, there is no part of the flight, not even the beginning, which is flat, or straight. The faster the initial velocity of the bullet, the less time does it have to drop, and the flatter the gun shoots.

A second point about which there is much wrangling, due to loose definitions of the terms used by the disputants, is the question of the "knocking down" effect, or shocking power, of a bullet. This quantity may be easily measured



by shooting the ball into a heavy pendulum, and noting the amount of swing caused by the impact. There is, however, a simple way of calculating the shocking power when the weight and velocity of the ball are known.

For instance, the old Springfield musket of the Civil-War days had a 500 grain ball moving at the rate of about 1000 feet per second, and a shocking power measured by the product of these quantities, that is, by  $500 \times 1000 = 500,000$  units (71.2 pd. ft.). The modern Springfield, the new rifle of our army, shoots a 150 grain ball at the rate of 2700 feet per second, giving a shocking power of  $150 \times 2,700 = 405,000$  units (57.7 pd. ft.). The Krag-Jorgensen has a 220 grain ball moving at the rate of 1900 feet per second, and hence a shocking power of 418,000 units (59.5 pd. ft.). The tendency is towards somewhat less shocking power than in the older model guns. From this it is evident that the shocking power is not the only factor that enters into the rifle question. The other more important factor is the energy of the ball just after it leaves the muzzle. This is a quantity that is not easy to define except in the technical language of the physicist and engineer, but I believe that I am not far wrong in explaining that the energy of a bullet is the measure of its destructive power, but not of its penetrating power. Suppose that two bullets, one .22 inch or about  $\frac{1}{4}$  inch, and the other .44 inch, or nearly  $\frac{1}{2}$  inch, penetrate into a pine log to the same depth. Obviously the .22 has not destroyed or smashed as much material as the .44, which bores a hole twice as wide, and four times as big in cross-section. Therefore the penetration cannot alone measure the energy.

If the resistance of a block of wood were the same for all velocities of the bullet, which is not exactly true, the energy might be represented by the product of the depth of penetration by the size of the hole, thus giving the amount of material crushed. This might be considered as a rough definition of the energy, but for finer comparison it will be best to use the exact expression  $E = \frac{1}{2}MV^2$ , which gives the energy in terms of the velocity and the weight of the ball.

Turning for a moment to our former illustration, the old Springfield would have an energy of 250 million units, which expressed in the engineer's units would be 1116 foot pounds. The Krag has 1880 foot pounds, and the new army Springfield 2430 foot pounds. Thus it is seen that the old rifle of the Civil War had somewhat more shocking power than the new Springfield, but far less energy, and less than half the velocity. In comparing the two types, however, it must be remembered that the ball of the older rifle generally stopped in the body of the wounded man, expending upon him the whole of its shocking power and energy, while

the new Springfield and other rifles of this type will shoot through many men in line, giving only part of the shocking power and energy to each. It will kill more men and at longer range, than its predecessor, but except at very close range where the explosive effect of the ball is of importance, it will not stop a man or beast, as effectively as a heavier ball, with less velocity and less energy, with small penetration but more shock. The British discovered this in the Soudan, where the mad charging dervishes could be shot full of .303 caliber holes without stopping them, although they died later, of course. In order to cause more of the shock and energy to be expended in the first object struck, the dum-dum or mushrooming bullet, oftener called the soft-point, has been introduced, and is now used in practically all high-power big game rifles, but is outlawed in warfare on account of the fearfully ragged wound it makes.

The modern military rifle shoots a bullet with a steel or cupro-nickel jacket, which enables the ball to follow the rifling in the barrel without stripping and thus fouling the barrel. This ball has enormous penetration, in some cases six feet of soft pine, and at long ranges, where its velocity has been reduced by air resistance to less than 1200 foot seconds, it makes a small clean wound. If, however, the tip of the steel jacket be left off, so that the soft lead point of the bullet is exposed, the effect is very different, as the lead rolls back in the shape of a mushroom, as soon as the bullet strikes a substance of even very slight resistance, causing a ragged wound, and having such reduced penetration that all of the shock and energy of the bullet is expended in the object or animal struck. This expanding, or mushrooming effect may be shown by shooting two bullets with the same velocity into a block of wood. If one is a full metal patched or jacketed ball, and the other is a soft point, there will be a great difference in the size of the holes, and in the penetrations in the two cases, and if the two bullets be recovered, the one will be found only slightly deformed, while the other is an unrecognizable lump of lead, with jagged pieces of the metal jacket embedded in it. The wound made by a sporting rifle using soft-point bullets will evidently be a bad one for the physician to treat, if indeed, as is often the case, the patient does not bleed to death before he can be gotten out of the woods.

One of the fundamental principles of physics, susceptible of easy verification in the laboratory, is the one which shows us that when the powder explodes in the gun, the momentum of the gun and the shooter is equal to the momentum, or shocking power of the bullet. Fortunately the respective energies are not equal, or no man would fire a gun more than once. It is less injurious to receive upon the shoulder, or nose,



as the case may be, the recoil of a heavy gun, which kicks back slowly, than the recoil of a light gun which kicks back rapidly under the same load. The shock is in each case the same, as can be shown by actual measurement, but the destructive power, or energy, is more for the lighter weapon. On this basis it is seen that the old style ball with its large shocking power requires a heavy weapon from which to be discharged, in order that the recoil or kick be not to energetic.

Some of the older military and hunting rifles weighed from 11 to 14 pounds and the ammunition was so heavy that a man could carry only thirty rounds where he now carries 150. Then too, the slow velocity of the ball, its consequent rapid drop, and short range made good shooting very difficult.

There are some who say that in those days they could shoot so well that they did not need all of these "new fangled contraptions," but let me remark in passing that the American people are shooting more and better than they ever did, and that the records of the recent rifle meets where the new Springfield was used show scores that have never been equalled anywhere or at any time.

The question of caliber is a complex one, and I shall only point out that the large diameter ball experiences more air resistance than the small one, thus losing its velocity more rapidly when other conditions are the same. The modern military rifles of France, Germany, England, Italy, and the United States, all are between .30 and .32 inch caliber, and have a very long completely jacketed ball which leaves the muzzle with a velocity of over 2000 foot seconds, and with a rapid spinning motion which is imparted by the twisted grooves, or rifling of the barrel. This spinning motion keeps them head on in their flight. The high initial velocity, sharp shape, and small air resistance insure very little drop within the ranges where an ordinary marksman can hit anything. The flight is exceedingly flat up to 300 yards, after which their velocity is sufficiently reduced so that the drop from then on is considerable.

The modern rifle has then the advantages of light weight, the new Springfield weighing about 8 pounds, light ammunition, less recoil, more energy, longer range, and increased accuracy. It has the disadvantage of less shocking power unless the range be very short, or soft point bullets are used, which under unusual or peculiar circumstances may not mushroom. These changes in the favorite weapon of man have introduced some new and interesting phases in the study and treatment of wounds. The modern rifle, aside from the expanding bullet effect, shows another even more remarkable phenomenon at close range, while the velocity is still very high. This is

what I shall call the explosive effect, and accounts for many of the so called "freak wounds" made by the newer rifles.

The following experiment illustrates this effect. Two exactly similar tin pails full of water and open at the top, are shot straight through the middle with two exactly similar bullets, one moving at the rate of 1000 foot seconds and the other at the rate of 2000 foot seconds.

In the case of the slower ball the water is violently ejected from the pail, but aside from a small hole at entry, and an only slightly larger one at exit, the pail is uninjured. The high velocity ball makes an equally small hole on entry, but the whole pail is simply blown apart, or exploded as if by a charge of dynamite placed inside of the pail. The explanation is not difficult. Water is an ideal medium for transmitting pressure, and the velocity of the ball is so high that the water has no time to rise out of the top of the pail and get out of the way. Hence the enormous pressure of impact of the bullet is delivered in all directions, laterally, up and down, as well as straight forward ahead of the bullet.

This effect has nothing to do with the nature of the point of the bullet; it is the same whether the point is soft or steel jacketed. A low velocity ball, even if a large one, seldom produces this effect, and a very light ball, if moving rapidly, will always do so.

The importance of this effect in producing wounds at close range can hardly be overestimated. If the bullet strikes some watery part of the body, such as the brain, or the stomach when full of liquid, the wound may be terrible. Even in the case of penetration of solid flesh and bone only, the lateral pressure produced may cause disturbances of nerves and organs far distant from the wound itself, and far more serious to the patient in consequences. This same bullet, after a longer flight, and consequently reduced velocity, generally produces a clean, small wound, which according to the reports from the Spanish-American War (House Documents, Vol. 112, No. 729) are strangely enough generally aseptic, even when made by a ricocheted ball, although in the latter case the wound is more ragged, and the ball has less penetration.

The expanding or mushrooming effect of the big game bullet is also worse at close ranges, for the soft nose of this bullet will not roll back into a good mushroom unless the velocity be rather high, probably at least over 1000 foot seconds. Hence it frequently happens that at very long ranges the hunter bores a neat little hole in the game, and there is not enough blood to follow the trail. It is often said by old hunters that for every deer brought in, two are killed, the one dying as surely as the other, but out of the reach of the pursuer. For this reason



there is to be noted a tendency in modern sporting rifles back towards the larger calibers, retaining however the high velocity and great energy which nitro or smokeless powders and nickel steel barrels have made possible. All of these developments, in a lesser degree have been repeated in the history of the revolver and of the automatic pistol. I may say in passing that it seems to me that the velocities reached in the case of the Mauser, Luger, and Colt pistols, high as they are, do not reach the point where the expansion of a soft nose bullet is certain, so that for stopping big game they are not as effective as the old .45 Colt and others. Moreover, the soft point bullet is outlawed in civilized warfare, so that for military purposes these small caliber, high velocity bullets having the advantages of long range, great penetration and accuracy, are open to serious objections. The tendency in the U. S. A. is back towards the larger caliber in the case of the pistol, although the automatic feature will probably be improved and introduced later.

As a weapon of defense, the small caliber automatic pistol is again open to the objection that while it may shoot the burglar full of many holes in a surprisingly short fraction of a second, so that he is of small consolation to his friends later, it may nevertheless not stop him before he has a chance to shoot back. The great penetration and range of these bullets put the innocent by-stander in as much danger as the fleeing criminal when the city policeman is obliged to draw his weapon.

The wounds made by the modern pistols, using steel jacketed bullets, are usually cleancut, and the bullet seldom stays in the body. The explosive effect is nearly absent except perhaps in the case of the Mauser and of the Luger at very close range. These bullets do no accumulate dirt with age as do the plain lead bullets, which may partially account for the fact that their wounds are so often aseptic. Another feature is the fact that nowadays the surgeon's first effort is not necessarily to remove the bullet, but rather to heal the wound. It was strikingly demonstrated in the Spanish War report already referred to that the ball itself seldom does harm if the wound be clean and kept aseptic, unless the bullet is lodged near some nerve center, or in a joint.

The X-Ray photographs in this report show clearly the facts brought out by my previous discussion of the wounds made by military bullets at long and at short range. For instance, after penetrating bony parts, the amount of comminution of bone was, at long range, seldom great. Unfortunately very little of the data refers to short range wounds, as the conditions of modern warfare prohibit this happening, ex-

cept in rare instances, in which cases the weapon is not always the rifle. The following table compares the ballistics and wound effects of the older with the modern rifle bullet:

|                                                 | MODERN<br>BULLET                                             | OLD STYLE<br>BULLET                      |
|-------------------------------------------------|--------------------------------------------------------------|------------------------------------------|
| Weight of Ball.....                             | Light.....                                                   | Heavy.....                               |
| Shape of Ball.....                              | Pointed.....                                                 | Snub-nosed.....                          |
| Shocking Power.....                             | Medium.....                                                  | Great.....                               |
| Penetration.....                                | Great.....                                                   | Small.....                               |
| Energy.....                                     | Very high.....                                               | Not very great.....                      |
| Trajectory.....                                 | Very flat.....                                               | Much curved.....                         |
| Expansive effect (sporting rifles only).....    | Great, especially at short range.....                        | Not very great.....                      |
| Deformation, (military rifles).....             | Very little.....                                             | Irregular and frequently large.....      |
| Free recoil.....                                | Small.....                                                   | Great.....                               |
| Range.....                                      | Great.....                                                   | Very limited.....                        |
| Wounds (military).....                          | Aseptic in many cases except at close range.....             | Septic as a rule.....                    |
| Wounds, long range.....                         | Clean Cut.....                                               | Irregular, generally lodged ball.....    |
| Wounds, med. range.....                         | Clean cut, no lodged ball.....                               | Irregular, generally lodged ball.....    |
| Wounds, med. range.....                         | Very ragged, with large torn exit (sporting rifle only)..... | .....                                    |
| Wounds, short range.....                        | Explosive effect.....                                        | Very little of the explosive effect..... |
| Comminution of bone: Military, short range..... | May be great.....                                            | Great.....                               |
| Military, long range.....                       | Very little.....                                             | .....                                    |
| Sporting, short or medium.....                  | Very great.....                                              | .....                                    |
| Danger zone.....                                | Great.....                                                   | Relatively small.....                    |
| Report.....                                     | Sharp Crack.....                                             | Roar.....                                |

Most modern of all rifles is the automatic, whose recoil is largely absorbed by a spring, and is utilized in ejecting the old cartridge and putting in a new one. The ammunition used is of the modern high velocity type, and of rather large caliber, especially in the case of the new .401 Winchester. In concluding, let me express my obligations to the Ideal Manufacturing Company's Hand Book, to the tables published by the Winchester Firearms Company, and to many articles by fellow gun cranks in the current literature of the day. Many of my conclusions are the result of my own experiment in the field and in the laboratory, and the figures on shocking power are computed very largely from my own data. The following table gives the ballistics of some of the best known modern rifles:

| Rifle               | Weight of ball | Velocity | Shock | Energy | Penetration Boards |
|---------------------|----------------|----------|-------|--------|--------------------|
| .45-90 W.....       | 300            | 1480     | 62.5  | 1457   | 19"                |
| .45-90 WHV.....     | 300            | 1925     | 82.5  | 2466   | 26"                |
| .30-40 Krag.....    | 220            | 1960     | 56.7  | 1880   | 58"                |
| .30-30 W or M.....  | 170            | 1950     | 47.1  | 1449   | 42"                |
| 8mm. Mannl.....     | 236            | 2080     | 70.   | 2270   | 62"                |
| 8mm. Mauser.....    | 227            | 2200     | 71.5  | 2440   | 66"                |
| .30 U.S.A. new..... | 150            | 2700     | 57.7  | 2430   | .....              |
| .303 Savage.....    | 190            | 1925     | 52.3  | 1564   | 42"                |
| .405 W.....         | 300            | 2150     | 92.   | 3077   | 48"                |
| .25-35 W or M.....  | 117            | 1925     | 32.1  | 985    | 36"                |
| .401 W.....         | .....          | .....    | ..... | .....  | 36"                |



# Recovering Bullets From Oiled Sawdust

(Reprinted from "The Bullet's Flight from Powder to Target")

SNOW could not be used in warm weather for catching bullets and search was made for some material to act in its place, something practical for warm weather work. Inquiry by correspondence availed nothing; meal, bran, and shorts were tried and found wanting, while soft cotton mutilated bullets worse than a pine board. One day Mr. Leopold said, "Let us try some sawdust," having some in his hand at the time. A box was soon arranged and filled with sawdust that had been used in the hardening room of the shop for drying oily knives, and immediately tested; to our surprise the bullets were recovered without serious mutilation. Not another hour was lost in preparing a box of fresh sawdust with sufficient quantity of thin oil to allow desired experiments to go on.

Dry, wet, and oiled sawdust were severally tested (fig. 28), showing three .32 caliber, 187-grain Zischang soft lead bullets from a powder charge of 47 grains; the right hand one caught in dry, the center one in wet and the left-hand one in oiled sawdust. It will be observed that the one from oiled sawdust is perfect as can be detected with eye or magnifying glass, and hundreds have been caught in same manner to perfection though the reason why oiled sawdust so acts is not easily explained.

The correct method of preparing is to sift through a No. 12 mesh sieve fine maple or birch sawdust and mix with thin machine oil which will not gum. The dust takes much oil, and sufficient must be added to thoroughly saturate without dripping; then resift through a No. 6 or 4 mesh, and if properly prepared it will not cake but will fall into the furrow made by a bullet, as coarse dry sand will act.

At 100 yards the .32-40 bullet often penetrates this sawdust four or five feet, the distance varying with its speed, weight, and hardness, and whether it keeps point on or travels end over end. To determine many things respecting rifle bullets it is essential that some means should be utilized to recover them un mutilated at point and base after being shot, and this was a lucky find. (Fig. 29) is from a photograph of experimenters in the act of picking bullets from a box of oiled sawdust at shooting butt of homestead range.

## SHORT-BARREL-SHOOTING

About the time tests were being made by shooting bullets into snow the question was

raised regarding to what place in the rifle the bullet upsets, and several schemes were devised to determine this, the most promising being to utilize barrels of different lengths, from one with a bore only  $\frac{1}{4}$  inch long from chamber to muzzle, up to five or six inches or more in length. So far as could be learned, this question regarding up-setting of the bullet had never been determined or even mentioned except as a mere supposition.

In all these recorded experiments, extending over nearly 40 years, it will be observed they have generally followed new lines, never repeating the experiments of others which have been logically carried out. It has been rather experimenting by exclusion, and this, as will be readily recognized, entails much original labor and no little groping in the dark, so some of these short-barrel experiments were both laborious and amusing, also interesting.

During 1902 pieces were cut from a new .32 caliber Pope barrel, unfinished outside, 3-16, 1,  $3\frac{1}{8}$  and  $5\frac{1}{8}$  inches, besides proper lengths left in each for a chamber. Pieces were also cut in the same manner from a new .32 caliber smooth bore rifle, of 5-16,  $\frac{5}{8}$ , and  $2\frac{1}{8}$  inches, and from a Winchester .328 caliber, No. 4 barrel,  $\frac{1}{4}$ ,  $\frac{5}{8}$ , and 10 inches, while there was found on hand a new piece of a .40 caliber Stevens, 3 inches long, thus making an outfit of 11 short barrels.

(Fig. 30) on page 61 shows all but one of these barrels, the right-hand figure being the concentric action and wire trigger for firing, into which the respective barrels are screwed.

Figure (a) shows the unloaded shell,  $2\frac{1}{8}$  inches long, and so placed that the several lengths of barrels may be compared, as may also be done by bullets in foreground. Figures (nn) show nuts for connecting one short barrel to another.

The above cut exhibits a short barrel when placed in its concentric action and lying in V-rest, recoil block behind, ready for firing. Another barrel attached to another concentric action is also seen ready for firing when transferred to the V-rest; in the foreground are the .32-40 shell and bullet. The barrel with its concentric action occupying V-rest is 5-16-inch long, the bullet issuing from muzzle being seated nearly to the shell in its chamber, and projecting from end of muzzle  $\frac{1}{4}$  inch.





FIGURE 29

After turning all these barrels on new arbors to fit an inch reamed cavity in an iron tube, six of the .32 caliber and two of the .38 caliber barrels were chambered for regular .32-40 and .38-55 shells. This iron tube was for the purpose of making one barrel out of two or more by holding their ends together in a true line within; thus a 5-16 inch barrel could be made into 1 5-16 inches by addition of the 1-inch barrel, and other innumerable ones by different combinations.



FIGURE 28

That the results of an experiment do not always coincide with a theory, was demonstrated with a vengeance during the first few that were tried, to make two of these short barrels into one within the iron tube. The barrels were cemented in tube with a hard black wax, used to hold arbors from turning in a rifle barrel instead of driving them, which would

injure the rifling. In the second shot from this piecemeal barrel the explosion sent the forward barrel with bullet in one direction, and the other with its attached action in another. An attempt to secure these barrels within the iron tube by set screws proved a failure, the explosion was so powerful that if any gas leaked into cavity of the tube the ends of these  $\frac{3}{4}$ -inch set screws were sheared off. It being evening and in the basement of a dark shop when this first experiment was made, the explosion furnished an entertainment and quite an element of danger which put Fourth of July into the shade.

Proper security was finally obtained by cutting threads on the ends of each barrel and joining by steel nuts (shown by figures nn of cut, page 61); and by venting joints with holes bored through the nuts, safety was assured.

The first real experiment was made with  $\frac{1}{4}$ -inch barrel laid in V-rest; placing a box of snow, with the thin cardboard which formed one end, in front of and 24 inches from muzzle, the first shot was made January 15, 1902. The bullet printed in center of target, point on, making a clean half-inch hole and was recovered from snow completely flattened by the muzzle blast, thus accounting for large print through the cardboard. It is hardly possible for those not present during these tests to appreciate the condition of affairs which is here indicated and recorded for the first time.

Experiments were made with these short



barrels, extending over a year, with different lengths, different combinations, with various alloyed bullets, with nitro powders both coarse and fine grained.

Eighty-nine 187-grain bullets were secured in the same shape as they left the different muzzles. It was noisy sport and necessitated stuffing cotton into one's ears for protection. This medley of tests was carried on at the range with concentric action and V-rest and multiplied out of curiosity. Perhaps the accompanying cut (fig. 32) will be of interest as it represents the 187-grain unshot Zischang bullets and a number fired from short barrels.

Figures 1, 7, and 14 are unshot bullets; 2, 3, 4, 5, and 6 are bullets fired from one short barrel into the muzzle of another, entering into and emerging from the .32-40 chamber of the second barrel. Figures 8, 9, 10, 11, 12, and 13 were fired from a  $\frac{3}{8}$  inch .32 caliber barrel through a 3-inch .40 caliber which was firmly screwed to the former; figures 15, 16, 17, and 18 were remarkably upset with 21 grains sharpshooter

powder, with no air space and .32-40 shell. All these bullets were loose-fitting or bore diameter.

With figures 2 and 8 the charge was front ignited; figures 6 and 13 were an alloy of 1 to 30 tin and lead; figures 15, 16, and 18 were shot with 21 grains of powder from a .32-40 shell, bullet entered half an inch into shell, leaving no air space, and extending .06 inch out of muzzle. The apparent tears seen in bullets were produced by a sharp steel prong, placed at varying distances from muzzle and also varying distances from line of low side of

the rifle bore. This prong was accurately adjusted by a screw and by it was determined at what position from muzzle many of these bullets commenced to upset, and at what position they completed their upsetting. It was found that many of them commenced to swell slightly at .06 inch from muzzle, and all that were tested received their full upset during first inch of flight of their bases from muzzle. Figures 15, 16, and 18 pretty well illustrate W. E. Mann's putty-plug theory.

Figure 17 was fired from a 62-inch barrel,

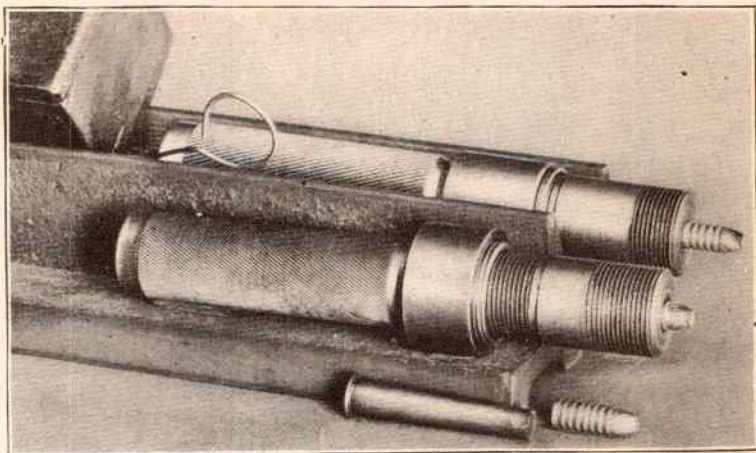


FIGURE 32

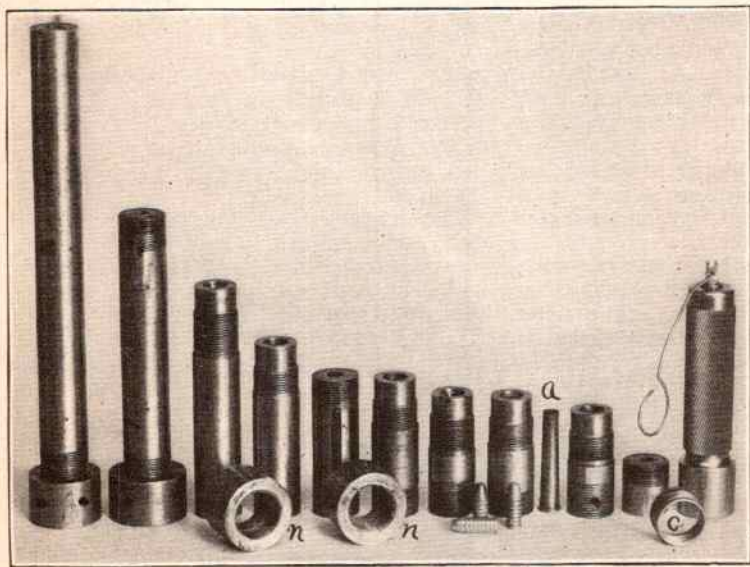


FIGURE 30



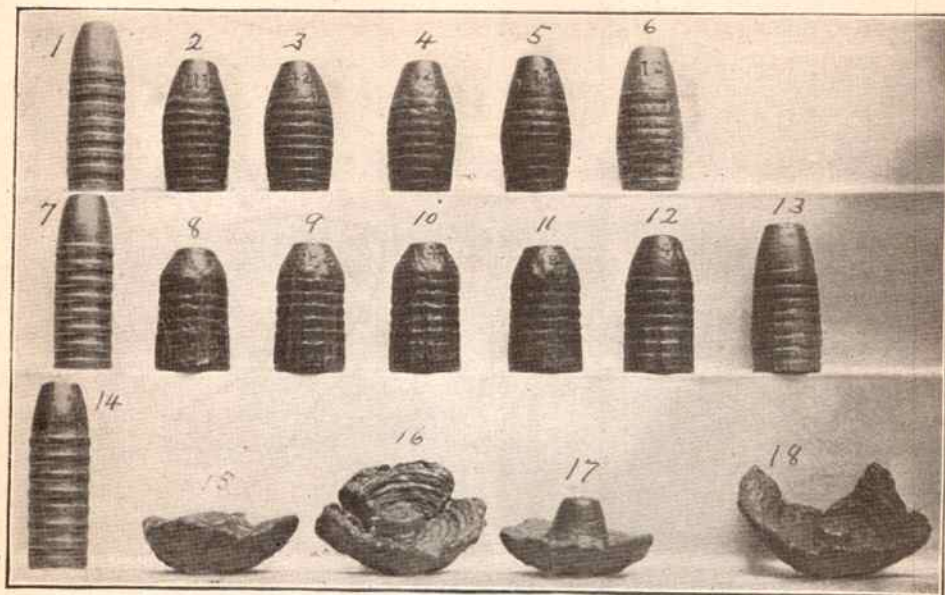


FIGURE 31

.32-40 shell full of Du Pont's .30 caliber high-pressure powder, leaving no air space, body of bullet extending .06 inch from muzzle and no prong interposed to obstruct.

It will be noticed that lead bullets, figures 2 to 6, and even the 1 to 30, after being driven through a 3.12 inch, .32 caliber bore, were expanded into the .32-40 chamber, completely filling it. These bullets continued to enlarge as they passed into the larger portion of the still enlarging chamber until their diameter reached .386 inch for lead, and .379 for the 1 to 30, showing that they filled the chamber for two-thirds its length where its diameter is .388 inch; all this with a normal charge behind a loose fitting bullet.

It will also be observed that front ignition, as in figures 2 and 8, does not do away with upset, as has generally been supposed by some well-known riflemen. Shots represented by figures 8 to 13 inclusive, being bore diameter, not only upset into the .32 caliber rifling, but after traveling 3.12 inches they again upset and, with the lead bullets, completely filled a .40

caliber to bottom and corners of the grooves. The putty-plug theory is here again confirmed, but does not encourage the theory that bullets must be larger than bore in order to take its grooves.

Before snow-shooting and oblique-base experiments were made, or short-barrel tests attempted, brother William claimed that a lead bullet in a rifle bore was like shooting a plug of putty from a popgun. A little later, while working on the range, this idea was again brought up when he asserted, still more emphatically, and seemed to show how soft bullets would stick in the bore, being pushed out sidewise, either side first as might happen, by powder blast behind, like pushing a plug of putty from a popgun, and it was decided to thoroughly test the matter.

Measurements taken from bullet bases which were recovered during snow-shooting experiments, seemed to bear out W. E. Mann's theory and short-barrel tests showed up his theory so thoroughly that they were multiplied until it was substantiated.





## Shotgun Balance

By H. W. HARMON

THERE have been few terms so generally used, or subjects so learnedly talked of, and so little understood, as shotgun balance. It is perhaps the most difficult to define, of all gun qualities, as here we find the verification of the old adage "What is one man's meat is another's poison." A long time ago, I had a very severe critic of some of my American Gun literature, who went into raptures over the superior balance of foreign high-grade handmade guns, and in a few paragraphs made clear his idea of balance, "The weight of the gun being so distributed as to be easily carried by the hunter." This may accord with the views of some of my readers, but it is not the balance referred to at the beginning of this article, but rather that quality the farmer's boy calls "feel" or "hang," as he applies it to his chopping axe, his scythe and snath, or hoe, and the mechanic to his hammer. We, who played ball in our early manhood on good teams, and went up against strong pitchers, will, if we "hark back" to the echoes of those days of yore, remember the care with which we selected our bats. How no description was vivid enough to enable another player to select for us, however superior as a batsman he might be. The two styles we used: one for the slow, curve heady pitcher, the other for the rifle shot delivery of the speed merchant. If you have handled the bats of a team of hard hitting professional players, you have been struck with the difference of balance in *your hands*, and if a player; have wondered how some expert could hit with the bat he used. If this diversity of opinion is so marked in as simple a thing as a base ball bat, with nearly straight lines, and made of one material, shall we wonder, with the combination of wood and metal, the curves and angles, pitch and cast off, length, weight, drop, straight grip, pistol, full and half grips, etc., etc., it is hard to determine our own perfect fit, to say nothing of describing it to a gunmaker so intelligently as to enable him to fit us,—or to a novice so clearly as to be of great assistance in selection. One might as well attempt to define perfection of feminine beauty and charm for the young lover's guidance. It is one of the interesting features of shotguns, that this balance is never the same, and never can be, with any maker; till man has reached the art of making *perfect duplicates*. Until that time, my dear reader, your favorite gun and mine, will possess an individuality all their own.

I recall today with the most vivid memory, a beautiful gun owned by one of our United States naval officers (of American make, too,) that I was asked to pass judgment on, whose balance (to me) was so perfect that I have hunted for years and years to find its duplicate, but in vain. I have one good gun that I have worked over and over, changing length and form of stock and barrels, till it, nearer than any I know, approaches that one ideal; but there is still a something it lacks of that perfection, that the experience of 50 years fails to reveal to me, and know of no further change I can make to bring it nearer.

Another gun of exquisite balance, that I saw in my boyhood days, was a flintlock double barrel of the most beautiful workmanship, ebony carved stock, 20 gauge, I think, made by Manton. I am now speaking of guns whose balance *filled the writer*. I do not think they impressed other shooters so deeply. Now in further illustration, I have two hammerless guns made by the Ithaca Gun Company. One from stock and the Company's selection from drop and length specifications. The other made to order, from the most careful description, and with the idea of making it a duplicate in balance of another gun. It is a beautiful arm, a delight to any gun lover, and every expert that has handled it, has commented on its exquisite balance, and in, *I think*, every case, said the most perfect they ever saw. Now to me, strange to say, its balance is not as good as the stock gun. Where is this peculiar property, this subtle distinction, that makes the difference? To my mind it lies not in one, but a host of features that combine to make our own ideal fit. I am of the opinion, however, that the greatest factor in fit is *in having the center of gravity*, at at point *very nearly* midway between the *portion* of the hands that support the gun.

Now, to return to the last named gun. That, I have every reason to believe, was made with great care; and so perfectly fits those experts who have handled it, why does it not fit me as well? For the reason that I hold my hand in a different position on the forestock than experts usually do. My belief is that to cut off one-quarter inch from stock, carrying the center of gravity a trifle farther forward, would remedy the difficulty completely for me, but would not improve the gun for the general user, so I simply change the position of hand and go along all right. Now, could we locate our point of balance



*i. e.*, the position of the hands in relation of the center of gravity, as they support the gun, in bringing to the shoulder, we would seem to have some rule to go by in ordering. But here comes another complication. With some guns (usually those of light weight and straight grip), there is a tendency with most shots I have known, to support the stock on the second finger of the right hand, till just as the butt plate touches the shoulder. With a heavier gun, with full pistol grip, the weight comes more on the little finger, making quite a difference in the point of support, and if the individual keep the left hand at some point on forestock in each instance, a consequent different balance.

I hope I have made my meaning clear as to the relation of center of gravity, and points of support. If not, this illustration may help to understand my meaning. Should we wish to raise a heavy bucket, using both hands, we would perhaps pass a stick beneath the bale and then bring the point of contact as near as convenient midway between the hands; and it needs no philosopher to understand that this is essential to the easy handling of the bucket. It is just as true of guns.

One of the world's greatest gunmakers thought he had discovered the exact point where the center of gravity should be, in inches, and fractions from guard,—but alas, he had only found his own, and those who used the gun just as he did. Another great English expert asserts that the best balance is where "the greatest weight of gun is nearest the center of gravity." There is undoubtedly much in this, but not all. If my idea of balance is to be accepted, *viz.* (that quality and form, that makes the arm most easily aimed), for if the pitch is greater than the shooter's fit, with hands in their natural position, the piece would be aimed too low and if not enough, too high. Perfect balance means more; and length and form of barrels, size and weight of stock, are factors, as well as drop, and cast off. One of the best American makers advocates the use of longer barrels than the ordinary standard, on the ground that they are more easily aligned. In other words, they balance better. Another, equally good, recommends shorter than the common standard. With *their pattern* these give better balance. I personally agree with the latter. The weight is brought nearer center of gravity, and the shooter; and for another reason, the shorter arm can be borne with so much less fatigue. Now then, the novice may say: What is the use of my ordering a fine gun made to fit me, if it cannot be so definitely described as to enable the gunmaker to make it? In answer would suggest, that he find a gun that seems nearest his perfect fit, carefully take the measurements, drop, length of stock and barrels,

the distance of the gravity from front trigger, (*i. e.*, the point where the gun balances) and give to the maker as the *outlines of your ideas*, and giving him the liberty to work them out in accordance with his. With his greater experience and knowledge, you will probably get an arm that will give you better results and more lasting satisfaction than you could possibly unaided, select. Should first tests not be perfectly satisfactory correct the error by holding. Usually the shooting too low is corrected by using left hand further forward on forestock, and too high by bringing in.

My faithful reader who has followed me thus far has, no doubt, concluded I am a devotee to fit and balance. True, but not that intangible mysterious one, that the young clerk in the gun store assures you only exists in the high grade hand-made guns of Europe. It is a personal preference, and you may stumble on it in the production of some unknown maker, in a cheap, illy finished gun, and search in vain for it amid the artistic arms of the best makers of the world. And, when found, it may be disappointing. My worst fitting gun was my best game getter. This comes from the fact that almost every one has a personal error in his aim. Like the Irish priest: "I partly know my own weakness." I shoot too low for rising birds with my ideal fitting gun, and get the down drivers with considerable regularity, consequently a straighter stock than I commonly use would give better results. The shooting schools of England try to find the gun you hit with best, not handle most gracefully.

Again illustrating by the great American game, you, old player, will remember the pitcher you couldn't fathom, and as you retired disgustedly to your bench, the coach said: "You strike below every time, try a lighter bat next time up," and you did and hit. The peerless Wagner says, his secret is hitting "where they ain't." Precisely so; he intuitively makes allowance for curve and drop, and hits where the ball is to be at the meeting point. You make allowance for flight, and try and aim where the bird is to be,—and that pattern of gun that will best assist you in evening your natural weakness, will be your game getter, whether its handling balance is perfect or poor, the engraving artistic or crude. It is true that high priced English guns handle finely, and are good game getters, but I ascribe this last quality to the more open pattern than all the other good qualities. If I have made my meaning clear, and given any young sportsman "more light," I congratulate both him and myself. If I have failed: can console myself with the assurance that I am only one more of that great crowd of gun writers who have striven with the subject before me unsuccessfully.



# Point Blank Range Trajectory vs. Accuracy

By LIEUT. TOWNSEND WHELEN

EVER since the adaptation of high velocity rifles to sporting purposes some fifteen years ago the majority of sportsmen have regarded the flatness of the trajectory as the most important element in a hunting arm. The questions always asked are: How flat is its trajectory? What is its velocity? The thought being that the flatter the trajectory the longer the range at which sure hits can be made, and the less important the question of accurate estimate of distance. Other things being equal, these facts are undoubtedly so; but are other things always equal? How about accuracy? Will a cartridge which, when fired at 200 yards raises only 4 inches above the line of aim give as good accuracy as another which raises 6 inches? Suppose we have two rifles, one giving a 4-inch trajectory at 200 yards and taking a 12-inch circle to hold its group of 10 shots at that range, and the other having an 8-inch trajectory but only requiring a 4-inch circle to hold its group. Which will have the longer point blank range at which sure hits can be made?

Some years ago Horace Kephart discussed the subject of trajectory and point blank range as follows: "Thus, for example, let us say that an 8-inch disk represents that part of a deer in which a bullet may be counted upon to inflict a mortal wound; then the deer's killing zone would be that distance throughout which the trajectory of the bullet would cut an 8-inch disk. For open country, where long shots are the rule, the rifle may then be sighted for an extreme rise of 4 inches above the line of aim, and the killing zone for deer will extend to that point where the descending bullet falls 4 inches below the line of aim. Remember that the line of aim or sight is different from the line of fire (prolongation of axis of bore), and that it is in the shooter's favor as will be seen below."

"Assuming, for example, that the highest point of the trajectory above the line of fire is  $4\frac{1}{2}$  inches, for a given rifle, when sighted to strike center at 160 yards, and that this highest

point is at 80 yards (it would really be a little nearer the target but the difference is trifling at short ranges), also that the top of the front sight 1 inch above axis of bore; then the trajectory would be about as shown in Table No. 1, page 187.

"This would be good for deer shooting up to about 200 yards without change of aim."

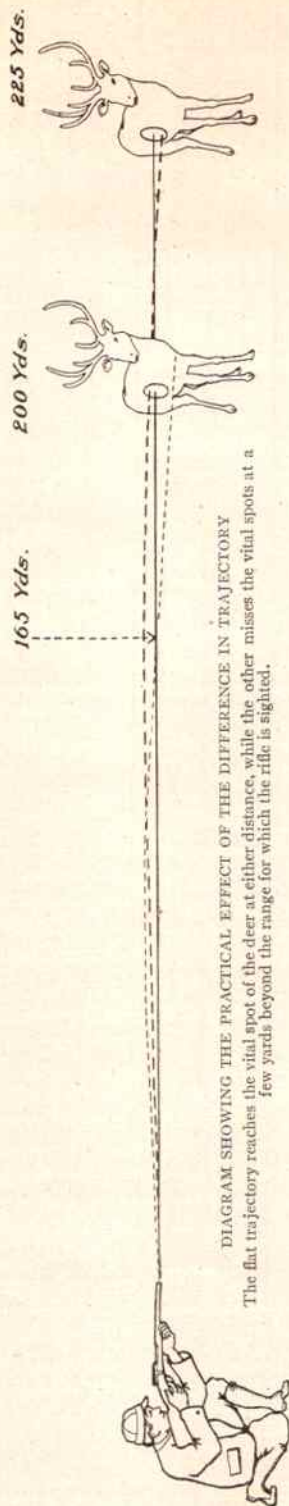
"But such a trajectory would be too high for shots near by. In the woods, where most shots are fired at from 40 to 100 yards, a rise of  $2\frac{1}{2}$  inches at 40 yards and  $3\frac{1}{2}$  inches at 60 yards would be excessive. For hunting in a locality where there is plenty of cover, this rifle should be sighted to strike center at about 80 yards; it will then shoot on a line practically level up to 100 yards."

Let us suppose that the rifle referred to by Mr. Kephart was the old reliable .30-40 Winchester. We see that if the rifle be sighted for 160 yards and the game be 200 yards away, the bullet descending falls 4 inches below the line of aim, and the rifle will evidently give a sure shot into the vitals of a deer at this range. But is this absolutely so? Let us look at the accuracy for a minute. There are three kinds of ammunition made for the .30-40 Winchester:—the full jacketed commercial, the full jacketed match ammunition, and the soft nose commercial. For the purpose of this discussion we can omit the first kind. The full jacketed match ammunition can be relied upon to give about a 3-inch group of ten shots at 200 yards; while factory and private tests of the soft-nose commercial ammunition, such as one buys in sporting goods stores show it to give groups of about 10 inches in good barrels. Of course different lots of ammunition and barrels will vary the size of the group somewhat but this will be about the average measure of accuracy of these two kinds of ammunition. In hunting rifles we have, of course, no use for the full jacketed match ammunition; it is the soft nose brand with which we are interested. At 200 yards,



therefore, grant that this ammunition will be sure to hit within 5 inches of the center of impact.

Now turn back again to the trajectory table. When the rifle is sighted for 160 yards it will strike 4 inches low at 200 yards and still hit the vitals of a deer standing at that latter range. But will it? Suppose that the particular shot fired at that deer is one which flies to the bottom of the group. That is it flies 5 inches low. Now we have not 4 inches low for the hit on that deer but 4 inches plus 5 inches or 9 inches. The shot strikes 5 inches below that 8-inch vital disk or 9 inches from the point aimed at. This shot probably passes under the deer and is no hit at all. We cannot therefore be sure of killing big game at 200 yards with this rifle, adjustment of sights and load. Two hundred yards is therefore beyond the point blank of this arm for deer. It might be argued that a sure shot could be made at 160 yards were it not for the fact that we cannot surely estimate the range correctly. By a similar computation we can figure out that, assuming we do not estimate the range correctly but rely on trajectory to help us out in this respect, 115 yards is about the maximum range at which we can be sure of hitting that 8-inch vital disk. This is not very comforting. The makers of the 8 m.m. rifle advertise for it a 300 yard point blank range, and as the .30-40 has almost exactly the same flatness of trajectory as the 8 m.m., many hunters have come to regard that as the point blank range of this arm. Here we find that in truth we must reduce this by 185 yards. We therefore see how inseparably we must consider trajectory and accuracy. What is needed in our rifle catalogues and books is a table of mean absolute deviation as well as one of trajectory. One maker does indeed give the accurate range of arms and ammunition, but will some one please tell me what accurate range means?



Does it mean the range at which one can hit a squirrel's head, or an 8-inch disk, or the bullseye of the military target? If the latter, pray what bullseye do they refer to when they say a rifle is accurate to 700 yards?

Let us now turn to a more cheerful example. We have discarded our old friend, the .30-40 for reasons above stated and we are looking for a new arm for upland game with which we can make sure shots at a longer range. The New Springfield with Model 1906 ammunition at once occurs to us because we know of its fine accuracy, its extremely flat trajectory, and we are also told that the full jacketed match ammunition, with which alone fine accuracy can be maintained, will give killing effects on big game.

On the opposite page is a trajectory table (No. 2) for point blank big game range for the rifle calculated with Mr. Kephart's rule, to which I have added the vertical deviation of match ammunition loaded with the 150 grain bullet and giving a velocity of 2700 foot seconds:—

In this table the rifle is sighted for 200 yards, and we see that should the game be at 100 yards the greatest deviation that can occur will be a shot 2.8 inches above the point of aim, while at 225 yards the greatest deviation will be a point 3.82 inches below the point of aim. The rifle will surely strike within the 8-inch vital disk up to 225 yards. If the theory of probabilities be taken into this calculation the point blank range may be slightly increased, until with the rifle sighted for 250 yards fifty per cent of the shots will strike within the 8-inch disk at 275 yards.

In table opposite, as a measure of accuracy, I have taken the mean vertical deviation, but this corresponds very closely indeed with the maximum vertical deviation or, in other words, with the radius of the shot group, for the match ammunition is so excellent that almost no off shots occur.



The New Springfield cartridge will therefore give a sure hit at big game at twice the range at which the old style high power cartridges of about 2,000 foot seconds will. But further than this we see how inseparably connected are accu-

racy and trajectory, and why, in making the choice of an arm we should ask not only what is its trajectory and velocity, but what is its mean vertical and mean absolute deviation.

TABLE NO. 1

| TABLE NO. 1                     | DISTANCE IN YARDS |      |      |      |      |      |      |     |
|---------------------------------|-------------------|------|------|------|------|------|------|-----|
|                                 | 20                | 40   | 60   | 80   | 100  | 120  | 140  | 160 |
| Above line of fire, inches..... | 1.89              | 3.33 | 4.19 | 4.50 | 4.28 | 3.47 | 2.07 | 0   |
| Sight allowance, inches.....    | .87½              | .75  | .62½ | .50  | .37½ | .25  | .12½ | 0   |
| Above line of aim, inches.....  | 1.02              | 2.58 | 3.46 | 4.00 | 3.90 | 3.22 | 1.94 | 0   |

TABLE NO. 2

|                                                                         | DISTANCE IN YARDS |      |      |      |
|-------------------------------------------------------------------------|-------------------|------|------|------|
|                                                                         | 100               | 200  | 225  | 300  |
| Trajectory, above line of fire, inches.....                             | 2.50              | 0    |      |      |
| Trajectory, below line of fire, inches.....                             |                   | 0    | 1.90 | 9.00 |
| Sight allowance, inches.....                                            | .50               | 0    | .12  | .50  |
| Trajectory, above line of aim, inches.....                              | 2.00              | 0    |      |      |
| Trajectory, below line of aim, inches.....                              |                   | 0    | 2.02 | 9.50 |
| Mean vertical deviation, inches.....                                    | .80               | 1.60 | 1.80 | 2.40 |
| Maximum deviation from point of aim with range unestimated, inches..... | 2.80              | 1.60 | 3.82 | 11.9 |



## Endurance Test of Automatic Pistols

WE learn from various reliable sources that the recent test of the Colt and Savage automatic pistols, by the United States Ordnance board was in every way successful. The test for endurance was exceptionally severe and exhaustive, over 6,000 shots being fired from each make of arm as rapidly as possible under the conditions of the test, water being poured through the barrels to cool them after each hundred rounds had been fired. To us the severity of the test as reported would seem unnecessary unless it was competitive between the two makes of arms. With the size of the caliber previously determined, speed of fire, reliability of function, with ease and facility of changing or refilling the magazine, should count for more than the mere endurance, which must always be limited to the number of shots that may be fired before the weapon becomes too

hot to handle. No type of pistol ever tested by any government has shown so many dependable qualities as the Colt and Savage in the trials just concluded; but notwithstanding their wonderful showing the arms were again remanded to the armorers and two months time allowed for minor improvements after which further tests will be made. Whatever the outcome of the final test may be, our ordnance experts have already demonstrated the superiority of the mechanical principle employed in the construction of American automatic pistols. American revolvers have for three quarters of a century maintained their supremacy in the domain of the one-hand gun and it must be gratifying to every native son to feel assured that there is little danger that conditions will be reversed with the new type.



## About That Deer Rifle

By CHAS. NEWTON

I WAS not at all surprised to note in the November issue of this magazine an article commenting upon one written by me and published in the September issue on the subject of Big Game Rifles, and since it seems, as frequently happens, that my article did not cover all the ground I take this opportunity to supplement it by replying to the comment.

First, the "introductory slam," second, a charge that I was not entirely frank in that I quoted the energy of a rifle at the muzzle instead of at 200 yards, and third, that my hypothesis that the amount of nervous shock necessary to kill an animal, except the wound be in a nerve center, varied according to the size of the animal is incorrect. We will consider these three propositions as they arise.

First, the "introductory slam" is a very valuable part of that or any other article, for the reason that it gives us at the outset an idea as to the identity and also the personality of the writer, mentally and temperamentally, in fact imparting more information along these lines than could be derived from a page of autobiographical description, and in this case apparently disclosing that the article was really written by one who is a frequent contributor to Outer's Book, although his contributions are usually signed with another name. "The hands are the hands of Esau, but the voice is the voice of Jacob." Therefore this introductory slam is very useful, being sometimes interesting and always instructive and its use should be encouraged.

Second: As to the charge that the muzzle energy of the bullets was given instead of the energy at the 200 yard range, this was done for the reason that there are no American manufacturers who give the ballistics as to velocity and energy of their weapons except at the muzzle, or, to be more accurate, at the center of the chronograph range, which is usually about sixty feet from the muzzle, and the energy figures regarding this rifle were given for the purpose of comparison with those of other rifles.

Had the writer given the energy of the rifle in question at 200 yards the critic could, and doubtless would, have come back with the proposition that it should be given at the muzzle in order that it might be compared with other arms.

Further, the writer is willing to credit the readers of this magazine with knowledge of the

fact that bullets fall off rapidly in velocity and consequently in energy and this falling off takes place with the ordinary sporting and military cartridges as well as with the one under discussion.

Third, regarding the hypothesis that the amount of shock necessary to kill an animal when the bullet is not planted in a nerve center varies as the size of the animal, I still think this to be practically true.

I note the instance cited of the woodchuck being shot through and through about two inches forward of the hips with a .30-30 bullet and being able to escape into its hole where it was found still alive.

The writer has hunted woodchucks diligently for the past thirty years, his bag averaging about 150 per season during the last twenty years, and during the last twelve years of this time they were all killed with high power smokeless rifles, the first of which rifles was a .30-30 Marlin.

I have seen a number of woodchucks struck a grazing shot with a high power soft point bullet which would almost disembowel them, but which did not penetrate deeply into the abdominal cavity and these woodchucks were capable of crawling slowly quite a distance since the *nervous shock* was slight, the bullet merely cutting open the abdominal walls, but I have never seen one in which the soft point bullet was planted well into the abdominal cavity which did not collapse on the spot. Therefore I am forced to the conclusion that the woodchuck in question must have been shot with a solid point bullet.

It is true that a woodchuck will stand a great deal of shooting up at times, as I personally have shot one with a .45-70 black powder rifle, the bullet striking in front of the right hip and coming out just back of the left shoulder about midway, vertically, and this woodchuck ran a distance of forty feet before he died, but this is an entirely different proposition from the explosive effect of the soft point high power bullet.

A distinction which was not noticed by my critic is that those animals which hibernate during part of the year have a much lower nervous development than those which do not hibernate, and consequently suffer far less pain and less nervous shock from a certain amount of mutilation than do animals with a higher nervous organism, therefore the woodchuck,



raccoon and the bear require a far greater amount of mutilation to produce a speedy collapse, unless the shot be landed in a vital spot, than do those animals which do not hibernate. In fact the amount of shooting up which a raccoon will stand before succumbing to the shock is remarkable.

For these reasons a comparison between the hibernating and non-hibernating animals is practically useless.

I might further observe that the woodchuck in question is said to have crawled a distance of thirty feet. A deer, elk or moose which traveled thirty feet after being shot would be considered to be killed very quickly, also even at ten times this distance, and the condition of a woodchuck shot through the body with a rifle is such that he crawls very slowly and for a comparatively short distance, although in his particular case two feet is often enough to lose him to the marksman, while a deer bounding away at full speed is an entirely different proposition. Were the speed of the deer retarded to as great an extent as that of the woodchuck the effect would be practically the same as instantly dropping it as far as securing the game is concerned.

Furthermore the shots upon woodchuck cited by the gentleman also the one cited by the writer are exceptional shots and not the rule, while the deer running for miles after being hit is so frequent as to be almost the rule instead of the exception, as witness the quotation from Mr. Van Dyke's work in my former article.

The article states that "a bullet weighing 150 grains driven through the heart, brain or spinal cord of an animal will kill just as surely as one weighing 500 grains." All of which is correct and the same might be said of a bullet weighing 50 grains, but the trouble is *to drive it through heart, brain or spinal cord of the animals*; while the succeeding phrase "and may be relied upon to kill at a greater distance from the hunter" needs no argument to prove it incorrect, since, as above mentioned, the problem being *to drive it through the heart, brain or spinal cord*, I insist that a 500-grain bullet so driven will be just as deadly, as one of less weight.

It is easily to see that the gentleman is not himself a hunter as men who have had experience in driving the bullet through the heart, brain or spinal cord appreciate somewhat the difficulty of performing this feat, which my antagonist performs so easily at his writing desk. Theoretically the heart, brain or spinal cord is the proper place to plant the bullet but practi-

cally the planting of it in those places in wild game is usually a matter of accident, as appears by Mr. Van Dyke's testimony quoted in my former article, and if by any chance the captious one should be a person capable of hitting either the brain, heart or spinal cord of an animal the size of a deer four times out of five at 75 yards with a sporting rifle he may well feel lonely for there are but few of his kind in the world; hence my conclusion that this remarkably good shooting can only be done from the armchair before the desk. The only man who was ever able to perform this feat consistently was buried by James Fenimore Cooper in the prairies of the West, with the stuffed body of his faithful hound at his feet, many, many years ago.

While still in his teens the writer was hunting woodchuck one summer day with a rifle when a crow flew over and was killed on the wing by a lucky shot; later in the day the same thing happened to a hawk, both being killed with the first shot fired, and the writer then jumped at the conclusion that the proper way to shoot birds on the wing was with the rifle and he argued very earnestly that ruffed grouse could and should be hunted with the rifle, but when the season opened and the grouse boomed up and dodged behind a bush while the hunter was trying to get his sights lined up this dream fell through; but the "pipe" in which he indulged during the few weeks intervening between the death of the crow and hawk and the disillusionment with the ruffed grouse is often brought to mind when he reads statements so often made about planting the unerring bullet in the brain or heart and he has something of a fellow feeling for the writers and something of an appreciation of why and how they write, as the man who seriously considers the planting of the bullet in heart or brain of wild game with unerring certainty is in exactly the same category with the genius who wrote of killing the antelope every other shot at 1500 yards and told us how Capt. Casey made eighteen consecutive bullseyes on the 1000 yard target at a range of a mile. Such shooting is awfully easy to figure out but mighty difficult to land.

In conclusion, recurring to the woodchuck incident, I will say that a year ago last winter the same person whom I think my critic to be, then writing under a different name, published some articles in Arms and The Man in which he gravely ridiculed the absurdity of shooting woodchuck with a .25-35 rifle and defended a .22 long rifle as the proper weapon with which to dispatch them neatly and quickly.





# Practical Advice on the Shotgun

By A. G. HOLMES

THIS article is brought out with the hope that it may lead to betterment as regards finish, style and safety of the guns before the public, for while the shotgun user has a large variety to choose from with their many developments, some armorers are still deficient when it comes to finishing their products, even in the better grades.

One picks up many a high grade weapon and in glancing along the barrels notes that the outside of the barrel has never been trued up. This is an eyesore to any shooter and such an arm should be returned at once to a manufacturer. The cost of a proper finish is trifling, but a number of manufacturers seem to think that the sportsman will overlook this fault.

One of the cheapest guns on the market today, however, makes a point to finish the barrel both inside and out apparently with the idea in mind that the sportsmen do want and will approve of this feature and consequently they have wonderful sales. So much for one item.

The repeating and automatic gun is here to stay and yet is subject to many refinements before they will meet the universal approval as a fine gun.

The repeating 16-gauge as made by one maker weighs more than their 12-gauge brush gun, which is a mistake. When a man buys a 16-gauge he is as a rule looking for a weapon lighter than a 12-gauge and one which he can handle with the greatest rapidity. It is not a trap gun, and hence should be built for the work it was intended and not as a makeshift. The manufacturer who puts on the market at the present time a repeating or an automatic shotgun of 16 and 20-gauge will make a fortune, but that gun must be built in proportion and not made on a great clumsy frame that has the appearance of a couple gas pipes fitted together by a man who knew no better or at best was experimenting. If the armorers of this country who are making the repeating guns (Remington, Winchester, Marlin and Stevens) would take the care to build the small bore gun as carefully as do Parker, Smith, Lefebvre and Ithaca, then and only then will the American public be satisfied to accept such a gun.

The small bore shotgun is on the threshold of a great wave similar to that of the small bore rifle a few years ago and many of the older shooters remember in the muzzle loader days

that the favorite guns were 14-gauge for large size and most of them smaller.

This is an age of improvement and the many who twenty years ago went afield with a ten-pound 10-gauge loaded with  $4\frac{1}{2}$  drams black powder and 1 $\frac{1}{4}$ -ounce shot in search of snipe, chicken and quail today prefers to go afield with a 16 or 20 bore ranging from  $5\frac{1}{4}$  pounds with 26 or 28-inch barrels to 7 pounds with the longer, 32-inch barrel, now coming into such universal use.

The days of the big heavy gun for any but duck shooting is past and even there the 12-gauge has been found capable of holding its own in general excepting such work as the open water shooting in battery and in long range shots on the pass or points where birds swing far off from shore, but I will touch on that farther on.

The 12-gauge is at present the trap gun and general utility gun ranging in weights from 6 pounds to  $8\frac{1}{2}$  pounds, and lengths of barrels from 26 to 32 inches, but a great many shooters are looking ahead to another advancement by taking to the smaller bore weapons.

Pick up the magazines devoted to field sports and one will find that the trend is for the smaller gauge gun.

The better gun makers are working hard on the matter.

Take such companies as Parker Bros., Hunter Arms Company, Ithaca and Lefebvre, and they advertise the smaller gun and show that they have unbounded faith, in the future of the small bore gun.

The writer has handled and shot about every make of gun known that is manufactured in this country, and Europe, and finds that only a very few makers really consider the wants of the sportsman unless he absolutely forces them to build what he wants.

They say they can not fill their orders now; or that they never had such a call before; or a dozen of other reasons. If their business is so large, then they certainly must be up with the times and increase the capacity of their plant to take care of the demand, and as Americans use guns of all makes the man who will turn out what is wanted will be the man to get the business.

Being a crank on the subject of the shotgun the writer has tried out every good gun he might be able to get his hands on and has had many





THE AUTHOR WITH HIS AUTOMATIC IN ACTION

guns turned over to him for his study and opinion which surely has been an enjoyable pastime. How many of the readers have ever seen the different makes, let alone handling or owning them as made by the different makers throughout the world?

Little differences of bolt, action, finish, material, hang and balance and the too and one different things that go to make up the shotgun in its finest sense, have been seen and studied, their shooting qualities tried out with shells of all makes and all lengths from the most diminutive load to the heaviest load used for wildfowl and live birds.

As the age of black powder is about past with its guns bored larger than the gauge and the age of brass shells and the hammer guns is disappearing, we look forward to the improvements of the future and unless each year shows us something extra good we feel as though our gun manufacturers were not keeping up with the times.

The powder manufacturers have developed their products to a remarkable degree and yet we find bulk nitros that will not keep but a few months after being loaded without deteriorating badly, and yet it seems but a short time since the writer shot Ditmar, the first smokeless put on the American market and later the American wood powder which one had to drive into a solid mass before it could be depended on to do any work. Shells and primers have been improved until now one can buy the cheapest shell loaded with smokeless powder, steel lined,

made especially as a safety feature and to prevent breaking off when used in the automatic and repeating arms now so universally used by the great mass of shooters where rapidity and fast manipulation depend on the shell.

One can step into a gun store and listen to the conversation between shooters and the dealer and he wonders at the woeful lack of knowledge of the guns and ammunition they are using.

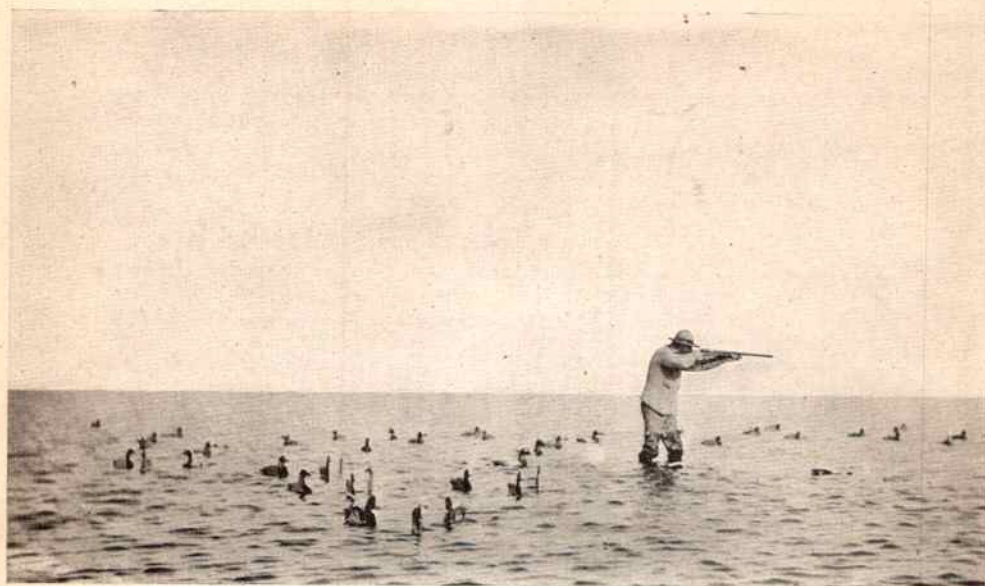
If they make one freak shot they have the most wonderful gun and the best load on earth, and if they miss a number of easy shots then the gun and ammunition are worthless. They are absolutely blameless and their arguments are convincing to themselves, probably.

The writer being brought up in a section of the country with a duck ground within a couple miles of his home naturally duck and snipe shooting have been enjoyed to an extent probably not realized by one one-hundredth part of the shooters of America and while hunting these two species of game it has been pleasant to watch the strides made by the younger generation in the sport and who have had the latest models to pick from and the latest improvements in shells and ammunition to select from.

In the matter of guns they should really come under different classes. The trap gun, the field gun and the duck gun.

The general utility gun, of course, is a 12-gauge of about  $7\frac{1}{2}$  to  $7\frac{3}{4}$  pounds weight with 30-inch barrels, one full choked and the other a modified choke or an improved cylinder, or, as





THE AUTHOR KILLING CRIPPLES ON GREEN BAY

many shooters now do, have an extra pair of barrels bored as they desire.

In the repeating guns two sets of barrels are very easily obtained at a nominal cost.

Still that is unnecessary for one can use a full choke gun and buy the brush or scatter loaded shells which will give good satisfaction in case but one gun is owned and is to be used for an all around weapon.

The trap gun, as used by the great number of shooters vary a good deal. One man uses and swears by his pump, another by his automatic, the next by his single trap gun and the next with his double gun, probably an ejector and possibly a single trigger with lengths of barrels ranging from 26 to 34 inches, but most being 30 and 32 inches.

The 32-inch barrel is favored by a great many as the longer sighting plane is a great help where one is nervous and liable to throw the gun off his bird from sheer nervousness and goose eggs are minimized by that means, while others claim it keeps them from shooting too quick. Whatever the reason may be for the difference in barrels lengths it is one that requires study, for many a man who could shoot a 32-inch barrel seems to handicap himself when using a shorter barrel and the man who handles the 30-inch barrel finds himself in the same predicament if required to use the 32-inch barrel.

A friend of mine, a quick snappy shooter, has had his greatest success with a 34-inch barrel gun on targets, while at live birds he does best with a 30-inch barrel. Different targets apparently require different weapons the same as

in the handicapping of shooters who are used to shooting at certain distance when required to move back find themselves uncertain as to what load or which gun and length of barrel they had better use.

This is especially true when shooting live birds for here the target; an object getting away with all the power possible must be centered as quickly as possible, for every yard away from the trap means that much more speed and distance and danger of carrying the load over the boundary.

The writer once owned the old Greener gun which E. D. Fulford made his great record of 199 out of 200 birds with one dead out of bounds and this gun was an even shooting weapon handling heavy loads exceptionally well but was not an extremely close shooter and from guns the writer has seen, used, owned and tried, found that the gun for live pigeons should not be such an extreme close shooting weapon as much as it should be an extremely even shooting weapon capable of making one pattern like another leaving no opening in the load for a pigeon to get through. Such a gun should shoot with comfort  $3\frac{1}{2}$  drams bulk smokeless and  $1\frac{1}{2}$  ounces No. 7 chilled shot making an even spread with extra good penetration.

Most trap guns are made with a drop of stock well under  $2\frac{1}{2}$  inches; preferably 2 to  $2\frac{1}{4}$  inches and long in the stock, and as a rule weigh from  $7\frac{1}{2}$  to 8 pounds.

No man can shoot a gun that pounds his shoulder and raises up hitting him on the cheek bone now and then and do good work, hence





A CHESAPEAKE DOG AT WORK

in trap work the shooter should pick out a load that is snappy, without any perceptible recoil that will make a uniform pattern, and if a new beginner it is better that he should start using the lighter loads, say  $2\frac{1}{2}$  or 3 drams powder and  $1\frac{1}{2}$  ounce No. 7 $\frac{1}{2}$  shot and later increase his load to  $1\frac{1}{2}$  ounce with whatever powder loads he finds best fitted to his gun. One powder may not be as satisfactory as another, and one load may not handle in one particular gun as well as some other load might, so it is always best to try different loads and then settle on one and stick to it.

Lots of my friends will laugh at this, as I am continually trying the new things myself and do not live up to these teachings as I would have others do, but then some of the shooters are not following the different new ideas as closely, nor do they experiment.

As regards the stocking of guns for trap work the straight stock is always spoken of, being the best for such work, not filling the hand, but as far as the writer has ever been able to discern by careful study, could never really see where any difference came in between the straight, the half pistol and the full pistol grip.

Possibly with extreme heavy loads one might find a straight grip easier to hold tight if the gun was recoiling heavily but of that I am not sure as I have shot the heaviest loads out of guns made by the same manufacturer, bored and weighing the same and with same drop and length of stock and the only difference being in the grips and am not able to say the difference was noticeable.

So many pistol grips are seen that are mere makeshifts and why in the world they are ever put on guns is a mystery as they look and feel like nothing they were intended for.

A pistol grip in its right sense is one that is made similar to the old fashioned muzzle loading single barrel cavalry pistol of our forefathers and is so made on some guns, but as made by many of our own makers in America the end of the cap is farther back on the stock than the comb above.

Mr. Crossman shows the cut of a stock on his new Springfield Rifle in the December issue of what a full pistol grip is and if it were made as a half pistol grip the cap would be done away with and that part rounded off as in the old cavalry pistol above mentioned. Pick up a gun with a grip made properly, say 4 to 4 $\frac{1}{2}$  inches from cap to trigger, and then one of the makeshifts that run 5 inches to more than that, and it will not take one long to note the difference.

The ordinary pistol grip is not satisfactory as it does not properly fit the hand and yet it fills up part of the hand and a good grip is not to be obtained as the hand slips up and down while if the shooter had a straight grip or a good pistol grip there would be no changing the hand up and down the stock trying to find some real steady position. This can be illustrated by going into a large gun store and trying a number of the different makes of guns that show the varieties of grips mentioned.

Another thing that many manufacturers overlook and that is the shape and heights of the comb above their grip and the thickness.



A comb had better be made quite heavy rather than thin but most makers put on a thing with an edge like a shingle for one cheek to rest on which is a great mistake.

Some of the repeating guns have good heavy combs and fit well in that respect.

The butt of the gun should never have a toe of any amount but should set square appearing quite flat. The recoil is less noticeable when the entire butt is square to the shoulder and does not slip down under the armpit if one is shooting at a high flying incomer.

## Good Word for the Twenty-Gauge

By CHARLES G. WILLIAMS

I SEE so many inquires in the Outer's Book in regard to 20-gauge guns that, as I am getting to be a genuine crank on 20-gauge shotguns, I will give my experience.

In the fall of 1906, as my seven and a quarter pound 12-gauge Ithaca was too heavy and my Remington auto was no better, and as the recoil of both was too severe, I saw I would have to "do" something if I continued to have my wife for my partner in my joys as well as my sorrows, so I bought her a No. 1½ Ithaca, 20-gauge, 26-inch barrels, both full choke.

We were in Colorado at that time and from where we lived I could go out in the morning, get two or three ducks and get to my work in time, and you can bet my wife enjoyed those morning trips as well as I did. It was not long before I was taking the 20-gauge out when I went alone and the hang, shooting qualities, etc., of that little gun 5½-pound found a place in my affection at once. I found out right away that I could get game as far away as with either of my 12-gauge guns, and the light weight, light load of shells (for thirty 20-gauge shells weigh just one pound less than thirty 12-gauge) made it more of a pleasure to go on a long tramp, for it did not seem like a cannon by the time I got home. When it came to targetting that gun, I bought shells loaded with Ballistite, Infalible, Deadshot, and DuPont powder with seven-eighths of an ounce of 7½-chilled shot in each case. I found out that I could do better—that is, make an even and better pattern with Ballistite, sixteen grains, than any other load, and it did not seem to kick so bad either. I counted (so my note book says) 232 to 248 pellets in a thirty-inch circle at forty yards with twenty-five shots, alternating right and left barrel, and with Du Pont I got as low as 202 pellets with the right barrel, with 244 as high score.

Many times the boys guyed me about my toy gun, only to change their tune when they saw how it would shoot and get game. I have some scores of 10 straight over the trap, not taking the handicap of four yards that the 20-gauge is entitled to, but shooting from scratch. To tell the truth, I wanted that little gun so bad

that I decided to get another and better one, for my wife; and while I was about it, a lighter one. Last March I ordered a No. 2 Krupp from the Ithaca Company, 20-gauge, 5½-pound, 24-inch barrels, both full choke.

I did not get it soon enough, for my wife to use it, for she died before it came, but I will always remember the pride and enthusiasm she showed when she spoke of the new 20-gauge she was going to have.

I got the new 20-gauge in June and immediately tried it out on targets. I could only get shells loaded with 16 grains Ballistite, or 2¼ drams Du Pont, seven-eighths of an ounce of No. 7½ chilled shot, so I tried both. In only one case did I find as low as 226 pellets in a thirty-inch circle at forty yards, and I found as high as 256. As for penetration I found plenty of shot that went completely through a one-inch soft pine board and some that only stuck in the wood, and I don't know of any 12-gauge that could do better. I am using the "new" 20-gauge now and got nine squirrels with nine shots, twelve rabbits with fifteen shots, and I also got the only two ducks I have seen this fall with three shots, which is not so bad for a scrub. I do not know either the free recoil or the muzzle velocity per second, but that can be had from the makers at the cost of a two-cent stamp. I would like to try my 20-gauge against a 16-gauge just to see how they compare, and some day I may do so, but I doubt if any larger gun will ever look right in my eyes after using the two 20-gauge as I have during the last four years.

There is only one thing I would like to caution "new" users of the 20-gauge. If you are naturally quick shots with the heavy guns, look out, or you will shoot too quick with the 20-gauge, and the men who are shooting behind their birds will find that they will shoot quicker with the 20-gauge and will get more game. Anyone will shoot a great deal quicker with the 20-gauge than with the larger gauges, on account of the shorter barrels and the light weight, so much so that at the beginning one may fall off in scores and kills, but a little perseverance will remedy that as I found from experience.



# Self-Loading Arms

## PART V

By THE GUNNER

### REMINGTON AUTO-LOADING RIFLES

THE Browning system, as applied to these rifles is that of a recoil operated action with locked breech. The barrel is solidly locked to the breech bolt, until after the bullet leaves the muzzle and recoils in a straight line, in the barrel jacket. As the barrel and bolt must recoil together over three inches before unlocking takes place and as numerous tests have fixed the amount of recoil, before the bullet leaves the barrel, as  $\frac{1}{4}$ -inch to  $\frac{3}{8}$ -inch, it is seen that there is practically no loss of energy through the self-functioning action.

These rifles are made in .25, .30, .32 and .35 Remington calibers with identical mechanisms in the various sizes, difference being found only in dimensions to suit the large or small calibers.

The loading is accomplished with stripping clips, loading five shells, or by hand, one at a time.

As the actions are similar, a description will be given as applying generally to the various sizes and the tables of data will be combined.

### GENERAL FEATURES

Length of barrel, 22 inches; length of rifle over all, 36 inches. Weight of rifle 7½ pounds. Number of shots, 5. Type action, recoil operated with locked breech, sliding barrel, take down; type magazine, single column, clip-loading box. Trigger pull, 13 to 3 pounds. Sights, regular, steel bead front dovetailed in block brazed to barrel jacket; sporting, rear, screwed to barrel jacket. Optional—any style front to dovetail, various special rear barrel-sights to screw; Lyman receiver and Marble or Lyman tang sights. Finish, standard, plain blued; stock, straight or pistol grip, plain walnut, rubber shot gun or steel rifle butt plate. Price, standard, list \$30.00; net approximately \$25.00. These arms are also made in a number of attractive special grades from \$40 list to \$140 list, having fine checked and carved stocks and engraved metal parts. Sling strap may be fitted for \$2.00 extra, to any grade.

### BALLISTICS .35 REMINGTON CALIBER

Diameter of bullet, .358 inches; diameter of head of shell, .422 inches; length of bullet, .910 inches; length of cartridge complete, 2.525 inches; weight of bullet, 200 grains; weight of powder, 32.5 grains; weight of cartridge complete, 405 grains. Type of bullet, either full patch or soft point; kind of powder, L. & R. Lightning. Muzzle velocity, 2000 foot seconds; muzzle energy, 1776 foot pounds; penetration, soft point, thirteen  $\frac{1}{4}$ -inch pine boards; penetration, full patch, thirty-two  $\frac{1}{4}$ -inch pine boards; accurate range, 500-700 yards; remaining velocity at 500 yards, 1645 foot seconds; remaining energy at 500 yards, 1202 foot pounds. Trajectory: 200 yards range, height at 100 yards, 5.40 inches; 300 yards range, height at 150 yards, 16.60 inches; 400 yards range, height at 200 yards, 36.40 inches; 500 yards range, height at 250 yards, 65.58 inches.

### .32 REMINGTON CALIBER

Diameter of bullet, .320 inches; diameter of head of shell, .422 inches; length of bullet, .910 inches; length of cartridge complete, 2.525 inches; weight of bullet, 165 grains; weight of powder, 26 grains; weight of cartridge complete, 315 grains. Type of bullet, either soft point or full patch; kind of powder, L. & R.

Lightning; muzzle velocity, 2057 foot seconds; muzzle energy 1550 foot pounds; penetration, soft point, twelve  $\frac{1}{4}$ -inch pine boards; penetration, full patch, forty-one  $\frac{1}{4}$ -inch pine boards; accurate range, 500-700 yards; remaining velocity at 500 yards, 1600 foot seconds; remaining energy at 500 yards, 938 foot pounds. Trajectory: 200 yards range, height at 100 yards, 5.79 inches; 300 yards range, height at 150 yards, 15.76 inches; 400 yards range, height at 200 yards, 33.44 inches; 500 yards range height at 250 yards, 62.68 inches.

### .30-30 REMINGTON CALIBER

Diameter of bullet, .306 inches; diameter of head of shell, .422 inches; length of bullet, .980 inches; length of cartridge complete 2.525 inches; weight of bullet, 170 grains; weight of powder 24 grains; weight of cartridge complete, 310 grains. Type of bullet, either soft point or full patch; kind of powder, L. & R. Lightning; muzzle velocity, 2020 foot seconds; muzzle energy, 1540 foot pounds; penetration, soft point, eleven  $\frac{1}{4}$ -inch pine boards; penetration, full patch, forty-two  $\frac{1}{4}$ -inch pine boards; accurate range, 500-700 yards; remaining velocity at 500 yards, 1580 foot seconds; remaining energy at 500 yards, 943 foot pounds. Trajectory: 200 yards range, height at 100 yards, 5.74 inches; 300 yards range, height at 150 yards, 15.21 inches; 400 yards range, height at 200 yards, 31.56 inches; 500 yards range, height at 250 yards, 57.12 inches.

### .25 REMINGTON CALIBER

Diameter of bullet, .257 inches; diameter of head of shell, .460 inches; length of bullet, .963 inches; length of cartridge complete 2.525 inches; weight of bullet, 117 grains; weight of powder 23 grains; weight of cartridge complete, 265 grains; type of bullet either soft point or full patch; kind of powder, L. & R. Lightning; muzzle velocity, 2127 foot seconds; muzzle energy, 1175 foot pounds; penetration, soft point, eleven  $\frac{1}{4}$ -inch pine boards; penetration, full patch, forty-four  $\frac{1}{4}$ -inch pine boards; accurate range, 500-700 yards; remaining velocity at 500 yards, 1650 foot seconds; remaining energy at 500 yards, 707 foot pounds. Trajectory: 200 yards range, height at 100 yards, 4.95 inches; 300 yards range, height at 150 yards, 13.77 inches; 400 yards range height at 200 yards, 28.12 inches; 500 yards range, height at 250 yards, 54.51 inches.

The mechanism of the Remington auto-loading rifle is rather harder to divide and classify than the Colt pistols, which were treated in a former article. The Remington is very simple and yet the various parts are so closely allied in their functioning that it is hard to separate them suitably for a description of the "works." For convenience sake, the parts will be taken as follows: barrel, barrel jacket and forestock, breech bolt carrier and breech bolt, magazine, receiver, lock and buttstock.

To the breech end of the barrel is permanently fastened a barrel extension, in which are locking grooves which engage the locking lugs on breech bolt to hold breech closed, slots for the extractor and the barrel locks to work in, guide notches for front of bolt carrier and a clearance cut for the bolt lock cam rib in receiver. Near the forward end of barrel is a thread on which is screwed the barrel nut, which takes the thrust of the recoil spring. The rear end of barrel is fitted to slide in the barrel jacket



and the front end, to slide in the jacket bushing. The barrel jacket has permanently fastened, to its rear end, the jacket head. In the rear face of this head a shoulder is machined, which fits snugly into the front end of receiver. Just under the jacket there is a hole through the head in which is the take-down screw and its lever. On the under side of jacket, forward of the take-down screw lever is a small lug into which the forestock screw is turned, to hold stock to jacket. On top of jacket, near rear end, the rear sight is fastened by means of two small screws. In the front end of jacket is a thread for the jacket bushing. Inside the jacket is a small shoulder which engages the buffer spring and also takes the thrust of recoil spring. These parts are shown in the sectional cuts, Fig. 25. The forestock is fastened to the under side of jacket by the forestock screw. The stock is mortised to fit against the jacket head and has a recess for the take-down screw and lever.

The breech bolt has on its front end a head in which is a recess, to fit over the flange of the cartridge case in chamber of barrel, a groove

The receiver contains and houses the bolt and carrier, the lock parts and the magazine. The receiver has, in the front end, a hole shaped to fit the barrel jacket head. There is a lug formed in bottom of front of receiver into which the take-down screw turns and which has notches in its back to hold the magazine and trigger plate. In top of receiver near the front is a port through which the magazine is loaded and the shells ejected from chamber. The back of this port is shaped to hold the loading clip when charging the magazine from a clip. In the right side of receiver is a slot in which the action operating handle works. Just back of this slot is the safety lever, which has a rocker inside the receiver which locks the trigger and the bolt when in "on" position. In the left side of receiver is a rib which cams the bolt lock cam pin when functioning. The rear end of receiver is extended to form a tang, for the fastening of the butt stock. In this tang is a tube which contains the action spring and follower, which presses the link, bolt, etc. On the left inside of receiver are hung the barrel lock, bolt carrier latch and magazine indicator, with its thumb



THE REMINGTON AUTO-LOADING RIFLE, NO. 6 GRADE

to hold the extractor and which has integral with it the two locking lugs. Through the bolt, longitudinally is a hole for the firing pin. Near the center, lengthways, of the bolt are cut slots, spiral cam shaped, which impart the turning motion to lock the bolt, in action. These slots engage the bolt cam pins in the bolt carrier.

The bolt carrier surrounds and contains the bolt; only the head of bolt projecting forwards from carrier. In the top of the carrier is a slot which contains the extractor. In the right side of the bolt carrier, near the front end is a slot in which the operating handle locks. In the left side of bolt carrier is a groove in which is the bolt lock and in which slides the bolt lock cam rib, of receiver. Projecting forward from bolt carrier are lugs which engage corresponding notches in the barrel extension and guide the bolt locking nuts. In the bottom of bolt carrier is a small notch which engages the bolt carrier latch in functioning. In the back of bolt carrier at the bottom is a recess in which is pinned the link. The bolt carrier has in its sides the bolt cam pins.

piece. In the bottom of receiver is fastened the trigger plate, which contains the hammer and hammer spring; trigger and trigger spring, and holds the magazine. The hammer has a small lug projecting from its back side in which are two notches which engage the hooks of the trigger in functioning.

As the hammer is cocked by the bolt carrier the notch at the back of the lug engages the hook at back of trigger. When the trigger finger releases pressure on the trigger, the trigger spring swings the trigger so that the front notch and hook engage, when another pressure on trigger by finger will fire another shot. The magazine contains the magazine spring and follower.

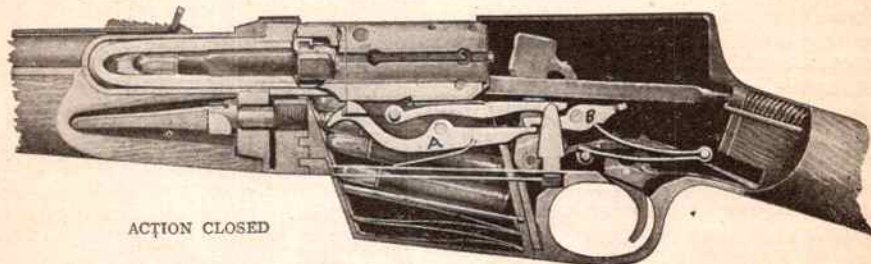
The action in firing proceeds as follows: Starting with the rifle unloaded, the safety is pushed "off" or down, the operating handle is pulled back until the bolt carrier locks, a clip of shells is introduced into the port in top of receiver and the shells pressed down into the magazine. Or the magazine may be filled one shell at a time. The operating handle is given



a light pull and allowed to go forward, chambering a cartridge and leaving the hammer cocked. Pulling the trigger allows the hammer to fall, strike the firing pin and detonate the primer. The recoil of discharge starts the barrel, bolt, carrier, hammer, etc., back against the pressure of recoil spring, action spring and hammer spring. This recoil proceeds only about  $\frac{1}{4}$  inch before the bullet leaves the barrel. The bolt remains locked to the barrel until the limit of rearward recoil has been reached, by which time

until the magazine is empty, when the bolt remains open. The magazine being charged, the operating handle is drawn back and allowed to go forward again, loading and cocking the arm.

As the barrel, bolt, carrier, etc., move back at discharge, the bolt lock cam rib of receiver allows the bolt lock to engage the bolt, so that bolt will not rotate in carrier as long as breech is open. As bolt and carrier go forward reloading and locking breech, the cam rib releases



ACTION CLOSED

the hammer has been cocked. As the barrel and bolt recoil, the front end of barrel lock rises and the rear end being depressed allows the bolt carrier latch to swing into engagement with notch in bottom of bolt carrier. The energy of recoil being spent, the recoil spring pushes the barrel forward, drawing the bolt forward in carrier, turning it through the office of the cam-slots and cam pins and unlocking it from barrel extension. The empty shell remains in the grasp of the extractor until the barrel is forward, when the ejector kicks it out. The magazine spring feeds up another cartridge. As the barrel reaches its forward position it

bolt lock so that bolt may rotate into locked position when it seats into the barrel extension.

When it is desired to cease firing the safety is set, or pushed up, locking the mechanism. If it is desired to refill a partly empty magazine, the safety being off, the operating handle is pulled back and the shells pressed into magazine until full when the operating handle is released and loads the chamber by going forward.

The trigger is balanced, so that the action will not "jar off" if the arm is dropped. The action is so nearly instantaneous that the trigger can not be released and pulled again before functioning is complete.



ACTION OPEN

throws the barrel lock down, releasing the bolt carrier latch and allowing bolt and bolt carrier to move forward under pressure of action spring. The bolt seats the cartridge and under action spring pressure, rotates into its locked position, its lugs engaging the notches in the barrel extension. The hammer having been left in the grasp of the hook at back of trigger, comes into engagement with the one at front as soon as the pressure of finger on trigger is released. The action is now ready for repeated firing

To take the arm down, see that breech bolt is closed, unscrew the small fore-stock screw and take fore-stock off barrel jacket. This exposes the take-down screw. The lever of take-down screw is turned out and the take-down screw unscrewed. The barrel jacket is then pulled from the receiver and the fore-stock screwed to the jacket.

To assemble, take fore-stock off jacket, draw operating handle back till bolt carrier catches, insert barrel extension into receiver, press jacket



head to its seat and screw home take-down screw. Push bolt forward in carrier so lugs are in position, press down magazine indicator thumb piece and close breech gently. Be sure bolt is fully forward in carrier as the locking lugs will not enter slots in barrel extension unless bolt is in this position.

With the arm taken down and hammer cocked, to remove bolt and carrier from the receiver, pull the operating handle back a short distance and holding bolt back with one hand, pull out the small pin in the operating handle and push operating handle forward out of bolt carrier with the other hand. Then bolt and carrier can be withdrawn from receiver.

Raise front end of extractor and pull it forward away from bolt and carrier.

Push out firing pin lock pin and remove firing pin. Push out two bolt pins and separate bolt and bolt carrier. Take out butt stock screw and remove butt stock. Take out trigger plate pin and screw and remove trigger plate which

contains hammer and trigger mechanism. Turn down safety to right angle with receiver, push out safety from left side and take out rocker. Take out bolt carrier latch spring, barrel lock, bolt carrier latch and magazine indicator.

Replace an inverse order, being sure that magazine indicator spring enters its slot in receiver and that front end of bolt carrier latch is over rear end of barrel lock.

To remove recoil and buffer spring, unscrew barrel nut, withdraw barrel, unscrew jacket bushing and take out recoil spring, buffer spring, spring case and washer.

To replace, slide barrel into jacket put in buffer spring, spring case (flanged end down) recoil spring and washer (serrated side up). Push washer down, screw down barrel not tightly and screw jacket bushing home.

The hammer, trigger and magazine mechanisms can be dismounted when trigger plate is taken out of receiver.

## Answers to Correspondents

### HOW TO PURCHASE A "KRAG"

A valued correspondent who has the welfare of the shooting fraternity at heart, sends us the following letter from the U. S. Ordnance Department which is self explanatory. Through the information published in an earlier issue of the Outer's Book many of our readers have received Krag rifles or carbines from the U. S. Arsenal and in every instance reported the arms received were satisfactory.

SIR:—

1. Replying to your letter of November, 1910 (O.O. 37152-3377), relative to obtaining obsolete arms, I am directed by the Chief of Ordnance to inform you that this department is authorized to sell to individuals, for their personal use, a limited number of U. S. magazine rifles and carbines, caliber .30, model of 1896 (Krag-Jorgensen), cleaned and repaired, at a price of \$6.00 for the rifle and \$5.00 for the carbine, plus the cost of the appendages and packing, which is 25 cents for the former and \$1.15 for the latter, for each arm.

2. Before the department, however, can authorize the sale of one of these arms, it will be necessary for you to furnish assurance that the arm is for your own personal use, and will not be disposed of in future, either directly or in-

directly, to other parties. This assurance can be given by the congressman from your district, one of the senators of your state, or the mayor of your home city. Your application should also be accompanied by New York draft to cover the value of the arm, appendages and packing.

3. These arms are not new, but are cleaned and repaired, as stated above, and in every respect serviceable.

4. This department has no blank forms to be filled out for the purchase of these arms.

### A BOY'S RIFLE

EDITOR GUN DEPARTMENT: In writing this brief letter I am keeping in mind the fact that the average boy does not want an air rifle, neither does he want a cannon—he wants something "betwixt and between" as the saying goes, and basing my judgment on my experience with rifles, the gun to fill the bill is the Hopkins and Allen single shot with lever action, octagon barrel 24 or 22½ inches in length, positive ejector, "take-down" system, and many other special features. This gun lists, I think, in the United States for only \$6.50 and is a great improvement over some other single shot small bore rifles. It is made in calibers: .22 long



rifle, .25 Winchester, .32 long, .38 Smith & Wesson giving, as any one may see, a desirable list of accurate small bores. My choice of calibers is without doubt the .32 long cartridge, it is the most powerful of the four, is very cheap and has a range of from one hundred and fifty to two hundred yards.

Now a word as to the action of this little arm. The breech block slides vertically up and down as in the Winchester single shot, and the ejector sends the shell flying out with a "click" that is good to hear. The hammer at all times rests in the safety notch, thus making accidental discharge impossible. For those who admire the "take-down" system, this rifle is one of the neatest of them all. The forearm does not protrude on each side of the frame as in some others I have seen, but is flush and even. The sights are Rocky Mountain rear and bead front, making a perfect combination. The stock slides easily to the shoulder and there is a feeling of buoyancy and balance to the whole arm. I will close by saying I am not an agent of the Hopkins & Allen Arms Company, but I own one of their excellent rifles and feel it their due to have it praised. Yours,

A. B. G.

### THE SHARP'S RIFLE

EDITOR GUN DEPARTMENT: I herewith submit the following list of questions to the answers to correspondence section of your excellent journal, and hope to have them answered in an early issue. Where was the Sharp's rifle manufactured? Is it still made, if so, where can it be obtained. Please explain the type of action of the Sharp's rifle. In your opinion is the .45-70-500 or the .45-70-405 as powerful a black powder cartridge as can be obtained or are they like the .44-40-200 falling gradually into disuse? Is the Lee-Remington rifle still made by the Remington Arms Co.? What kind of a rifle was the old Spencer? Was it accurate, and also please describe the Ballard rifle briefly. Yours, A. B. GEILKE.

[The Sharp's rifle was manufactured by several firms and in different cities. So far as our information goes, the Sharp's rifle was invented by Christian Sharp and was at different times and dates made at Philadelphia, Pennsylvania, Hartford, Connecticut, Chicopee Falls, Massachusetts and at Richmond, Virginia. Over 90,000 Sharp's Rifles of different models were purchased and used by the United States Government during the Civil War. Sharp's arms were also used by United States troops in the war with Mexico as early as 1845. It is no longer made, but many are still in use. It may be purchased in various models from Francis Bannerman, No. 501 Broadway, New York

City. The type of action of the regular Sharp's rifle is the falling breech block, which is operated by a lever under the stock, which also forms the trigger guard.

The .45-70 cartridge with bullets varying in weight from 230 to 500 grains is still much used by big game hunters. Black powder cartridges of .45 caliber, containing from 60 to 125 grains of powder and from 300 to 550-grain bullets may still be obtained from the Winchester and U. M. C. Companies. These, like the .44-40-200 and other excellent cartridges that have served us well, are gradually being displaced by smokeless cartridges of smaller caliber and greater energy, range and penetration. The Lee-Remington is not being manufactured in quantities at present, but may be obtained from the Remington Arms Company, or any of their agencies. The Spencer rifle was one of the first successful repeating arms made in America. It was a seven-shot arm, lever action, with a tubular magazine located in the stock, from which the cartridges were fed under pressure of a spiral spring. The arm was accurate, but necessarily of rather limited range as the cartridge was short with a bullet heavy in proportion to the powder charge. It was of 56 caliber and a rimfire. The Spencer was made by the Spencer Repeating Arms Company, Boston, Mass. About 95,000 of these arms were in the hands of Federal troops at the close of the civil war.

The Ballard was a single shot arm, the invention of C. H. Ballard. It was made by the Ballard Arms Company, Fall River, Mass., later by the Marlin Repeating Arms Company, New Haven, Conn., under whose hands it became one of the most famous single shot, long and mid-range and hunting arms ever developed in any country. It is no longer made but is still greatly in demand among target shooters.—R. A. K.

### FOR THE .22 COLT

EDITOR GUN DEPARTMENT: I see there is considerable complaint in the sportsmen's magazines about shells sticking in Colt's .22 caliber target revolvers. I think this is caused by the tight crimp on the shell, more than any thing else. I have one of these revolvers and had 100 of the .22 W. R. F. cartridges on hand that were made soon after the Winchester Arms Company brought out their Model 1890 rifle. These shells are loaded without crimp and do not expand or bother in extracting. I believe they could be loaded with a higher grade of powder when not crimped. They should not be heavily crimped for revolvers and single shot rifles. I find that the Colt's .22 caliber revolver shoots more accurate than I can hold it. I am living in hope that the Smith & Wesson Company will put out their Model 1891 single action revolver



in .22 caliber rim fire; the cylinder of this revolver is so quickly removed that one could have an extra cylinder at small cost and use all of the .22 rimfires on the market, except the automatic, if the manufacturers would make the bullet for their .22 extra long with a longer heel, make it weigh 45 grains, and use a high grade of powder, it would give good results in revolvers. Yours truly, F. P. RHOADS.

[I am inclined to think the successful working of the old W. R. F. shells, as described by you, is due to the fact that the shell metal is slightly heavier or harder than that of the shells made at a later date. Not all of the shells of recent make give trouble, nor all of the shells of any particular make, but some batches of almost every make will swell and stick. I believe your scheme of having two cylinders, one chambered for the W. R. F. and one for the common .22 short, long and long rifle could be made to work in both makes of arms and it would be a very simple matter to effect a change in the cylinder of the S. & W. if as you say it were made in single action model 1891.

I have recently received letters from shooters in different parts of the country, recommending the use of Peters Cartridges in the .22 revolvers. It is claimed by those who have given them a fair test that no trouble whatever has been experienced either with black, smokeless or semi-smokeless in any of the Peters .22 caliber cartridges in the new arms. Information also comes to us that .22 caliber cartridges of any make or size, loaded with the new "Lesmoke" powder are giving perfect satisfaction in the new .22 revolvers.—R. A. K.]

### HIGH POWER RIFLES

EDITOR GUN DEPARTMENT: Do you consider the '95 Model Winchester as accurate as the New Springfield, when used with the 1906 Rimless? Which in your opinion is best for a hunting arm? Of course, we are now able to get the Winchester in take-down, and it is possible to use a telescope on top, we have done so at times on the .30-40 Winchester, and where possible we prefer a sight mounted on top. Does the Rimless show better accuracy than the .30-40 when pointed bullets are used in actual tests? Trusting you are in a position to answer these questions. Very respectfully yours,

M. E. THAYER.

[There can be no material difference in the accuracy of the New Springfield and the model 1895 Winchester when both are chambered for the 1906 ammunition; both have the same length of barrel (24) and both are now bored the same diameter (.308). Whatever difference in accuracy might develop in a test in which all

personal equation of the marksmen were eliminated, would be due to structural differences of breech action and locking mechanism, as well as the speed of the firing mechanism. The New Springfield breeches up snugly with a cam purchase, is locked symmetrically by lugs on each side of the bolt, which gives direct unyielding pressure against the force of the explosion. It is an established fact that a bolt locked with but one lug does not do this, and although the errors of muzzle delivery caused by these peculiarities are constant, and may be corrected by the sights, yet they do exist. The Krag has but one locking lug and it was found that there was a drift tendency of the bullet between the muzzle and the 200 yard target, that did not appear in arms of the same type locked by two or three lugs. The lock action of the New Springfield is shorter and quicker than the Winchester Model 1895, causing quicker and stronger ignition with the same ammunition. These are all hair splitting differences that would never be discovered by the average man. In my opinion they might all be ignored in the choice of a rifle for hunting if the favored arm was otherwise satisfactory.

Answering your question direct, the New Springfield should show the greater accuracy for the reasons given. Either arm will show greater accuracy than any one not an expert can get from them. The Winchester Company makes an excellent scope for their model 1905 and the Stevens Company is making one for the New Springfield. The .30 Rimless with any form or weight of bullet will show superior accuracy, range and energy to the .30-40 with any bullet at any range, although the latter is very satisfactory. The superiority of the .30 Rimless is more apparent as the range increases. As to which is the better hunting arm, if you wish an arm for big game and favor a lever action, there is no better than the Winchester Model 1895, taking the 1906 ammunition. If you would prefer a bolt action, I would heartily recommend the Sauer-Mausier chambered for the same cartridge. It has three locking lugs.—R. A. K.]

### TO LOAD CAP AND BALL

EDITOR GUN DEPARTMENT: I am a regular subscriber to Outer's Book, and having noticed that other subscribers are having questions answered courteously through the Gun Department, I am encouraged to ask one myself. Can you tell me the method of loading the cap and ball army revolver? I have one, a fine old Remington .44 caliber, for which I have purchased bullet moulds, but they appear to be too large. The bullets will go into the chambers and breech of the barrel but will not go into the muzzle of the barrel; this is without a patch, and I always thought they should be loaded the



same as a muzzle loading rifle. Are the bullets too large or are they purposely made that way? Is the above named revolver accurate, and if so, for what distance. Yours,

H. W. RODGERS.

The mould described by you is the correct size for your .44 cap and ball Remington revolver. Chambers are bored slightly larger than the barrel to facilitate loading, and to make the bullet take the rifling. The barrel is throated at the rear end to ensure entrance of the bullet from the chamber without shaving. To load these revolvers a pocket powder flask, having a small charger that would measure the exact charge was used. The weapon was placed at half cock and held muzzle up, butt to the front. A charge of powder was then poured from the charger into the exposed chambers on the right-hand side in succession until each chamber contained its powder charge. The bullets were then placed in the chambers in the same manner, each being pressed home as it passed under the hinged rammer. Another method was to make paper cartridges, similar in design to those used in the old muzzle loading muskets, by which the process of loading was somewhat simplified and less time consumed. It is possible that you may be able to purchase some of these cartridges of Francis Bannerman, No. 501 Broadway, New York City. No patch or wad is required in reloading these arms. If your mould makes conical grooved bullets you will find that to lubricate them with pure tallow will improve the shooting. Wipe off all surplus lubricant from the sides and base of the bullet before loading. Many, in fact most of the old Colt and Remington cap and ball revolvers are extremely accurate at pistol shooting ranges, although they will shoot well much further. Use only black powder in these arms and waterproof caps. You might be able to purchase one of the original powder flasks from Bannerman. —R. A. K.]

#### A MATTER OF CHOICE

EDITOR GUN DEPARTMENT: I intend to buy a rifle of .32-40 caliber and my choice lies between the Model 1894 Winchester, and the Model 1899 Savage. I wish to use the .32-40 black powder cartridge for target work and hunting on the farm, as it is reloadable and cheaper, but I would like to be able to use the .32-40 high power smokeless in case I might make a trip after big game. Will the Savage with its barrel bored for the .32-40 high power smokeless do good work with the black powder cartridge, or will the lead bullet foul the barrel? What is the velocity and energy of the .32-40

high power smokeless as compared with the .30-30 and .32 U. S.?

Would the .32-40 Winchester high velocity cartridge be powerful enough for black bear, mountain lions or deer? How does the twist of the rifling of the Savage compare with the Winchester? Yours, H. D. P.

You could make no mistake in purchasing either the Winchester Model 1894, or the Savage Model 1899 for the work outlined by you. Both rifles, when chambered for the .32-40 cartridge, are rifled with a 16-inch twist. The only change that will be necessary to have made to shoot the high power .32-40 cartridges is, when ordering, specify that the barrel must be made of smokeless or high pressure steel. When the barrels are made of the latter materials, black powder and lead bullets, or smokeless powder with full or half mantle bullets may be used, the twist being the same. Lead bullets will not foul as the 16-inch twist was originally designed for them, but they should not be used with the high pressure smokeless powder.

The .30-30, the .32 special and the .32-40 compare as follows: The .30-30 with 160-grain full or half mantle bullet has a muzzle velocity of 1925 foot seconds, muzzle energy of 1316 foot pounds. The .32 special, like the .32-40, also has a 16-inch twist, with the 170-grain full or half mantle bullet, it has a muzzle velocity of 2050 foot seconds, muzzle energy of 1585 foot pounds. The .32-40 with the 165-grain full and half mantle bullet has a muzzle velocity of 2065 foot seconds and muzzle energy of 1338 foot pounds.

These results are obtained with high power smokeless powder. There is practically no difference in the ballistic performance of the three cartridges in the high power loads, and the same is true of the .32 special and .32-40 with either black or smokeless loads, but on account of being better adapted for reloading, the .32-40 is in every way preferable.

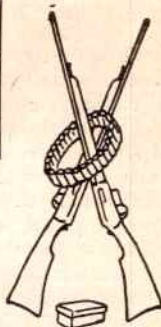
The mechanisms of both Savage and Winchester rifles are strong and reliable. As you wish to use the arm for target work and will reload your cartridges, I would recommend the Savage. I believe the revolving magazine is adapted for your purpose, as it would not always be necessary to crimp the shells when loaded with black powder for target work. It would be necessary to do so if using a rifle with a tubular magazine you will find the .32-40 with high power ammunition heavy enough for any game in the United States. The .32-40 is one of the most accurate rifles made. There are slight differences in the cartridges for these rifles as loaded by different makers.—R. A. K.]





## GUNS AND AMMUNITION

EDITED BY ROBERT A. KANE



This department is intended to be a place for the exchange and discussion of views on any subject pertaining to arms and ammunition, from which no one with an idea to advance shall be barred. The only conditions are that the opinion must not be manifestly absurd, that it be expressed in courteous language and that no personalities be indulged in. Each opinion is printed for what it is worth and its publication does not commit the editor to the view expressed. The widest range will be permitted and our readers are invited to make free use of these pages, but it is important to remember that *under no circumstances will personalities ever be permitted.*

### The Air Gun to Make Marksmen

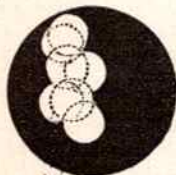
FOR various reasons that might sometimes be difficult to account for, many very worthy people, otherwise logical and consistent, have become obsessed with the theory that to learn to shoot well with any type of firearm requires, not only special talent or qualifications in the individual, but that special arms must also be provided for certain lines of service; and that in the event of failure to secure the type of arm best adapted to their needs no other weapon differing in weight or caliber should be used. Such theories are based largely on the assumption that with any except the arm regularly employed, beginner might develop faults of holding, sighting, etc., that might prove detrimental and would have to be unlearned when changed conditions compelled a change of weapon. The writer, whose experience in the training of riflemen has been somewhat varied and lengthy, does not support that theory. He believes that the fundamental principle of directing the flight of a missile through the air is constant and may be taught by any weapon, tool or appliance from which a projectile of appropriate form may be thrown in the direction of the object of aim to a degree approaching reasonable accuracy. Man is pre-eminently an adaptable being and this quality is as applicable in his use of firearms as in the numberless other appliances handled by him in the domain of industry. It would be safe to hazard a sizable stake that a great majority of our most successful rifle and pistol experts have graduated successively from the home made "Elder Pop Gun with its hickory rod;" the Flying Dart, patiently fashioned from a barrel hoop and a cedar shingle; the Bow and Arrow, the Cross Bow; the deadly sling shot and the ever fascinating .22 caliber rifle. The young marksman,

who in his earlier training has missed even the detestable bean shooter, or that pest of pedagogy the noiseless putty blower, has overlooked a factor in his kindergarten course that his long range military or match rifle may not supply. Note carefully and marvel at the natural grace and skill, and total disregard of conventional shooting methods, that a street urchin with his rubber sling-shot will drop a dove from the peak of a building onto the heads of pedestrians, or mysteriously dislodge a dozing "tommy" from the sunny angle of a back fence; or with his smokeless and silent miniature catapult create vacancies in the ranks of the pestiferous English sparrow. The writer has long been of the opinion that the basic principles of the art of shooting may be successfully taught through the medium of the most simple, harmless inexpensive and unobjectionable devices. Some years ago a progressive officer of the regular army, while addressing a convention of officers of the Wisconsin National Guard on the subject of gallery practice, made the following statement: "Some of the gentlemen present may be surprised to learn, that by diligent practice of the aiming drill with the service rifle at a black paster stuck on a wall 30 feet distant, *good marksmen may be developed without firing a single shot.*" This was while the .45 caliber Springfield was still in use and gallery practice was regarded as drudgery by every one except a few irrepressible enthusiasts. With the adoption of the Krag came many new and ingenious devices such as the supplemental chamber, the auxiliary .22 caliber rifle barrel; and even the regular .22 caliber sporting rifles were freely used by the more progressive and enthusiastic instructors who had long since learned that the art of shooting may be acquired w



any type of arm that will shoot and that ultimate success does not depend on weight, caliber, length of barrel, trigger pull, or the foot pounds recoil. These latter points, while important in their place and to be considered at the proper time, are refinements that may well be left to advanced riflemen and the ballistic expert. Those of us who have been in touch with the development of rifle shooting in our army and national guard, will recall with expressions of impatience some of the arguments advanced by mere theorists in regard to the arms that should be used for gallery practice and the making of riflemen. It was maintained by some that under no circumstances should any arm but the service rifle be used, for the reason that any variation of weight or dimensions from standard would have a detrimental effect on the marksman's performance on rifle range or in action. Six pounds was the minimum trigger pull; it might weigh sixteen, but to monkey with the armory adjustment was to court dire disaster. Owing to the inherent stupidity of the average American it was not considered prudent to trust our soldiers with anything like a repeating or magazine arm: It was too complicated for them, while a rifle having a tubular magazine would change balance rapidly as the magazine was emptied so that the bullets would fly harmlessly

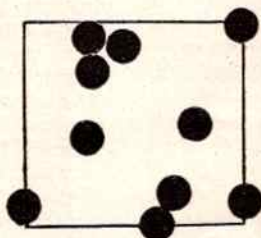
over the heads of the enemy before the dough-boy could remember that there were sights on his gun or how to use them. Instead of teaching a recruit to aim at or below the bullseye, and how to release the sear without deranging his aim, he was instructed to hold to the left or off the target so that when he closed his eyes and threw his brawn and avoirdupois onto the trigger, the muzzle might possibly be induced to come back into the original line of sight. These were only a few of the absurd theories entertained by some of those in authority, before practical, thinking marksmen proved them to be mainly fallacies. Through the medium of boyhood weapons much practical knowledge may be acquired that will be of great value in mastering the art of shooting, when in later years one graduates to the long range military rifle, the heavy hunting rifle or the less rangy scatter gun. Within the effective game getting range limits of pistol, shotgun, or hunting rifle, the work of the marksmen is necessarily to a great extent of a mechanical nature and any weapon that will train and develop holding ability, or perfect co-ordination between brain, eye and muscle is not to be despised. In this particular field the value of the .22 caliber rifle cannot be overestimated. Fixed metallic ammunition was invented about 1853 and the .22



7 shots at 25 yards.  
22 bore rifle in  
competition



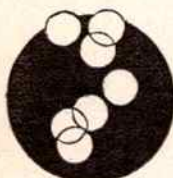
8 shots 15 yds. Com  
petition diagram,  
22 bore Greener



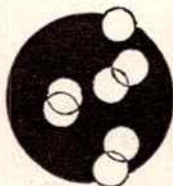
10 shots at 50 yards Diagram  
made by lady competitor  
at Miniature Bisley, after  
two months practice with  
a Greener 22 bore rifle



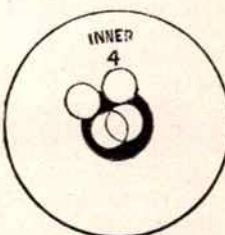
7 shots at 25 yards.  
Exeter competi-  
tion, 22 bore  
Greener



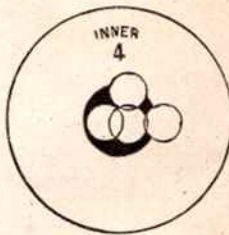
7 shots at 20 yards,  
with Lincoln  
Air Rifle, Bisley  
1906



7 shots at 20 yards,  
with Lincoln  
Air Rifle, Bisley,  
1906.



8 shots with Air Rifle at 8 yards in competition





## The Outer's Book

caliber rifle with its miniature cartridge was the logical result, developed and perfected by the genius and foresight of enterprising American manufacturers. No other arm or caliber has done as much to help educate riflemen and foster the love of firearms among the youth of our land as the tiny .22. Were it not for the

on any subject of importance, it is most satisfying to know that some of the world's greatest authorities on shooting matters are in accord with us as to the methods of training riflemen.

Mr. W. W. Greener of London, England, one of the world's greatest gun builders, author



THE DAISY AIR RIFLE

unreasonable prejudice existing in the minds of a few neurotic parents and feminized educators in nearly every community, it would be possible through the medium of the small bore rifle to graduate 95 per cent of our school boys with a good practical knowledge of rifle shooting, that would make them available as straight shooting soldiers in the emergencies that have never



THE DAISY TARGET

failed to come to every nation, and usually finds them unprepared. While it is desirable that some arm closely approximating the service arm be adopted, such an arm is not imperative, for even the harmless air gun which we consider beneath our manly dignity to notice, is a training medium not to be overlooked or despised. However sure one may be of his own contention

of The Gun and its development, and several other excellent books on firearms has this to say on the subject of air guns in connection with the miniature rifle movement in England: "In the early days of the movement there were not wanting detractors who argued that nothing but practice with the service rifle could be of any practical value in the field. *The author has always contended that the primary principles of rifle shooting could be learned as well with the miniature rifle at a short range as with a rifle of larger caliber at a greater distance.* \*\* The advent of the air gun afforded an excellent opportunity of testing this theory, and in 1905 a match was arranged by Mr. Lincoln Jeffries and Mr. Hirst between two teams of seven on a side. The team captained by Mr. Jeffries was composed of four soldiers, or volunteers, who had served their country in the South African war, and who, presumably had a sound knowledge of rifle shooting. \*\* That under Mr. Hirst's leadership consisted of air gunners, *not one of whom had previously fired a military rifle, and whose training ground had probably never exceeded a seven yards range.*" "Both teams used the service rifle and ammunition, and each fired five shots at 100 yards, yet in spite of the fact that some of the air gunners did not even know how to load their rifles they succeeded in beating Mr. Jeffries' team by thirteen points, proving conclusively that the rudiments of rifle shooting are best acquired by



THE BRITISH WAR OFFICE RIFLE



continuity of practice, whether it be at 10 yards or 100 yards."

"This resume of the movement would be incomplete without further reference to the part taken therein by the workmen of Birmingham. Unable to obtain long ranges they

"To improve my shooting at the traps, I strung a small bell by a piece of wire to a rafter in my cellar and with the aid of a small candle behind a shield placed in front of the ((bell)) target, and a gas light back of the score, I soon had a very good range at little or no expense,



THE BENJAMIN AIR RIFLE

quickly demonstrated their adaptability to the circumstances, and by utilizing the air gun obtained excellent practice in an ordinary room; a league was formed and this later became a national organization. The first English air guns and rifles were manufactured by the author and were so distinctly in advance of the foreign made weapons previously available that they speedily became very popular and at the present time, Birmingham made airguns hold the foremost position amongst air gunners.

"The diagrams shown are actual size and may be accepted as showing the line of demarkation

which is perfectly safe, and am having the finest kind of practice and sport at the rate of 60 shots for one cent, and practically no wasted time, and no gun to clean. I shoot 100 times in 15 minutes. Last winter I increased my average 8 per cent by this method."



BENJAMIN BULLETS SHOT AGAINST STEEL



PENNIES BATTERED BY A BENJAMIN

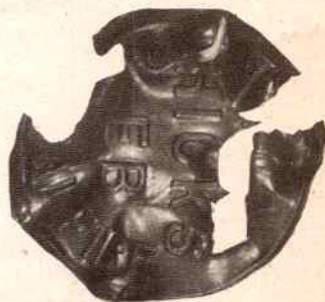
between the air rifle and the .22 bore rifle, there being but little to choose between the two weapons in point of accuracy at from eight to ten yards. Beyond these ranges, however, the .22 bore rifle is undoubtedly the superior."

That the air gun may be useful even as an aid to trap shooting, is shown by the following excerpt from a letter from E. F. Slear, the well-known Philadelphia trap shot, to the Benjamin Air Rifle Manufacturing Company:

"The essential thing in trap-shooting—or any kind of shooting—is *accurate pointing* and this training can only be had by actual practice.

"Where a single bullet is used, erratic pointing will show up at once, and unerring accuracy will be attained much quicker than where the shotgun is used only, and which costs five cents for each shot as compared with the Benjamin, 60 shots for one cent."

The value of the air rifle having been demonstrated, it would seem that it might be utilized as a practice arm in communities or educational institutions where there is a sentiment against powder burning arms. The thing most essential is to begin the instruction of our boys in the rudiments of rifle practice at the most impressionable age, and before the more serious problems of life monopolizes their



BENJAMIN SHOTS ON A TIN CAN

time and attention. It matters little what type of arm is selected, the ultimate result will be the same. A spirit of competition and generous rivalry will be fostered by the less objectionable air gun and graduation to the more powerful



and effective weapon will be natural, logical and made with safety. The assured success of the boy scout movement and kindred organizations, like the Boon and Kenton Clubs, affords opportunities for the making of riflemen that has not heretofore been equaled since those worthies left traditions of their courage, and skill with the rifle as an inspiration to the boys of America for all time.

The shooting instinct is a natural endowment of every normal boy and with the air gun his preliminary education as a rifleman may under proper direction, be commenced at an age when there will be comparatively few counter attractions to weaken his interest or claim his attention. It is possible that owing to the very satisfactory status of the .22 caliber rifle and its ammunition in America the air gun may not have reached as perfect a condition of development as an auxiliary practice arm with us as with our English neighbors; but the time is here when, if we would maintain our traditions and acknowledged supremacy with the rifle, we must utilize every means at hand. We believe the air gun has a field, peculiarly its own and one that it is practically unlimited. The enormous sales of the Daisy, the King, the Chicago, the Benjamin, the Quackenbush and other powderless, odorless, noiseless and dirtless air guns, proves this, and we are not alone in thinking that a well made air gun with rifled barrel capable of giving accuracy equal to the .22 caliber rifle, at from 25 to 50 feet, would be welcome in many places where practice with powder burning arms would be strenuously opposed. The success attending the miniature rifle movement in England has resulted in a noticeable improvement in the small bore rifle and its ammunition. The use of the air gun is also responsible for much of the enthusiasm that has been aroused, more especially among that class whose meager

income would prevent extensive target practice with more expensive arms; and it is from this very class that the great majority of riflemen in every country must be recruited. In our own country the enterprise of manufacturers of air guns is doing much to start the American boy right, on his road to proficiency with weapons of precision. The manufacturers of the Daisy Air Rifle, of Plymouth, Michigan, have a list of 1500 companies of Daisy Cadets already organized and equipped with their rifles. The Daisy Rifle Company has been in business for 21 years and during that time have placed millions of their rifles in the hands of our boys. We believe that the training they have acquired through the use of this simple little weapon, is one of the most valuable hidden assets this nation has, and if within the military service period of their lives they were mustered into service, every one would prove himself to be a good marksman with the service arm. At the age when the air rifle should be placed in a boy's hands he is alert, keen and impressionable. He has few preconceived ideas and nothing to forget. He just learns to shoot naturally as he learns every other sport of boyhood and although he may not be called upon to exercise his knowledge for a number of years it is impossible to forget it. Boys as a rule are restless and fond of novelty, but if there is anything that will hold their attention it is a gun. It may sometimes tax the resourcefulness of an instructor at first to keep up the interest of beginners, but this condition will quickly disappear as each young scout begins to win the praise and challenge the admiration of his comrades through his ability to do things with a man's weapon. It has ever been the laudable desire and ambition of every healthy boy to be regarded as a leader and a hero among his fellows, and to be accounted a crack-shot is a good start on the pleasant trail to that coveted distinction.

## A Case of Sweating Out

A subscriber writes: "I have a new .33 Winchester, has not been shot more than forty shots, take the best possible care of it, but when I have cleaned it as clean as possible I can see a copper coloring in the muzzle. It shoots true so far but I imagine it to be in the first stages of what may develop into a troublesome case of metallic fouling. Will you please tell me how this may be removed and oblige."

As an effective treatment for your .33 Winchester barrel, I would suggest that you apply a liberal coating of Marble's nitro-solvent,

let your rifle stand for 24 to 36 hours and then wipe thoroughly. Repeat this treatment and use the Marble rifle cleaner if necessary. I do not think the discoloration in your barrel is caused by metallic fouling, but by the sweating out of a certain property of the smokeless powder fouling, which seems to have been forced into the pores of the metal. The barrel should be wiped daily until there is no further evidence of color to be seen. If not removed, what appears to be but a harmless color will soon destroy your barrel



## The Marlin Field Gun

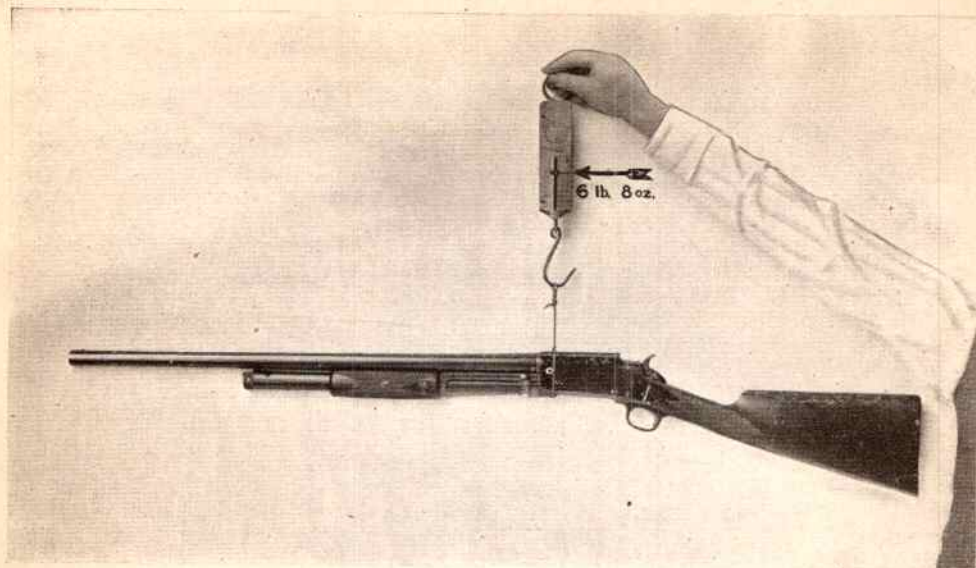
IT is sometimes difficult to account for the radical changes of sentiment that periodically takes place in the minds of sportsmen, in regard to weight, gauge, length of barrel and type of weapon used in the field, at the trap, or on the duck marsh; and while local conditions will often count for much in the final selection, there are certain basic principles in gun construction, the result of fixed physical laws and accumulated human experience that should never be lost sight of. With the relative proportions of weight of gun and energy of load definitely determined, there is still much that may be done in the way of further refinement to make an arm in every way more satisfactory and effective. True progress in gun building is due quite as much to the freely offered suggestions which are the result of experience and experiment of observing sportsmen, as to the progressive gun builder who readily accepts these suggestions and in advance provides new goods to meet the changing sentiment. Gauging the growing sentiment of shotgun users by scores of letters received daily from practical shooters, we believe that there is a strong drift of expert opinion setting in, favoring lighter and handier guns for certain lines of shooting; not only is there a demand for arms of less weight than those formerly used, but some of the more advanced thinkers among the shooting fraternity are courageously placing themselves on record as favoring a radical reduction in the size of the bore. In view of the fact that 10 and 12-gauge guns as originally built were designed for black powder loads with soft shot, producing excessive fouling, tremendous recoil, and the loss of one-fourth of the shot by deformation, the present movement for lighter weight and smaller bore guns is altogether logical and consistent with the symmetrical development of the gun. The days of the culverin and the hand cannon are far behind us; a dozen brands of smokeless powder, practically perfect, enables us to obtain range, pattern and penetration, and immunity from fouling, never dreamed of in the old days. Snugly fitting wadding forms a perfect gas check between powder and shot chambers and supplies a springy cushion that improves the pattern and modifies the recoil; chilled shot, uniform in size, and hard as steel, which cannot be crushed or flattened at chamber or choke, gives a pattern practically controlled by the skill of the gunsmith. These are only some of the reasons why it is possible and advisable to reduce the avoirdupois of the gun which, as has been

shown, may easily be done without sacrificing safety or efficiency or the comfort of the shooter. A brief quotation from one of the many letters received on this subject, may serve to show the trend of sentiment among a goodly number of sportsmen to whom a gun is something more than a mere tool for the killing of game.

"During the past season, while carrying around a gun weighing from  $7\frac{3}{4}$  to 8 pounds through the woods, sometimes on very hot days, which occasionally show up in the fall, and having other impediments to act as a drag, I become more and more obsessed with the idea that I did not need such a heavy piece of artillery in fact, it is just possible that I really did not need any; but the gun furnishes the excuse, you know. I do not fancy either the single shot, or double tube guns, and my interest and nature seems to require a repeating or automatic shotgun; even with them I consume very little ammunition, and the minimum of game satisfies me. But to return to the point. My beautiful automatic is an excellent and reliable arm but for the long and sometimes warm autumn hikes I want something considerably lighter. The Marlin people state that their new field gun weighs but six pounds and nine ounces and is made in 12-gauge; this would indicate that a 12-gauge *repeater can be made pretty light*, but if a light weight 12-gauge is impracticable, they also make a 16-gauge weighing from  $6\frac{1}{2}$  to  $6\frac{1}{4}$  pounds, which would be a very desirable arm for field and cover shooting."

The Marlin 16-gauge is not merely a 16-gauge barrel fitted to a 12-gauge frame; it is a 16-gauge gun from muzzle to butt-plate with receiver, magazine, fore-end and every part beautifully proportioned, finely balanced and symmetrical. A great many sportsmen like the one from whom we have quoted, still prefer the 12-bore but insist on an arm of less weight. To meet this ever-increasing demand the Marlin Company has placed their new 12-gauge Field Gun on the market. It is made in take-down model and with 24-inch barrel weighs but  $6\frac{1}{2}$  pounds. The barrel is made from a very fine grade of special smokeless steel, having an extremely high elastic limit and a tensile strength of 100,000 pounds to the square inch. The stock and forearm are made from a selected grade of beautifully grained Circassian walnut, both are neatly hand checked and finished in oil with the smooth, dull-satin finish so popular among discriminating sportsmen and found only on high grade guns. The stock as regularly made





ILLUSTRATING THE PERFECT BALANCE OF THE MARLIN

has a straight grip, is  $13\frac{1}{2}$  inches long and has a drop of 2 inches at the heel and  $1\frac{3}{4}$  at the comb; the latter is high, full, well rounded and exquisitely modeled. From trigger guard to butt plate the lower line of the stock is long and gracefully curved, which, with the straight slender grip reinforced by double steel tongs, forms a stock of rare beauty and exceptional strength. A take down system of unsurpassed strength and simplicity has been adopted for the Marlin shotguns; the barrel is heavily threaded to the depth of nearly an inch, with a left hand thread which when screwed into the receiver against the broad shoulder of barrel and frame the arm is rigid and strong as if no joint existed. Some of the exclusive mechanical features of the Marlin Field Gun that will be quickly noted by practical gun users are the powerful twin extractors that engage opposite sides of the exploded shell head, ensuring easy and positive extraction. The shell chamber is absolutely perfect and is nowhere weakened or disfigured by deep extractor cuts; the magazine is probably attached to the barrel by strong lugs and the clean tapering barrel is not marred by constricting bands, or weakened by unsightly dove-tailing.

A most desirable feature of the Field Gun and all Marlin arms is that the action is tightly closed and locked at all times except while the empty shell is being thrown out thus preventing all possibility of clogging the working parts by the entrance of dirt, sand, snow or other foreign matter. When the action is closed in position for firing, the bolt is locked tightly up against the head of the cartridge completely

enclosing it within solid steel walls effectively preventing any possibility of injury to the shooter from the blow back of powder gases or fragments of copper or brass caused by bursting of defective primers or ruptured shell heads. Safety and simplicity have long been the distinguishing features of the Marlin arms. Safety is obtained by the employment of only the highest grade of material and workmanship, simplicity is assured by a correct mechanical system requiring but few parts, all symmetrically proportioned to each other with no small or delicate parts to break or rust out. Although the Marlin Field Gun is a 12-gauge and weighs much less than any other repeater of its gauge or type, neither structural strength, durability, beauty of outline or perfection of balance has been in any degree sacrificed to lessen the total weight of the arm. After a rather close study of the different types of shotguns, the writer believes that while any type of shotgun may safely be reduced in weight to a point below what most sportsmen would consider practical, the repeater types from the nature of their construction may be refined and lightened to meet the ideas of the most fastidious, without in any way lessening their natural margin of safety. From the perfectly fitted butt-plate of hard rubber deeply corrugated to prevent slipping to the muzzle of the shapely dark blue barrel, the fitting and finish of every part of the Marlin Field Gun is a temptation to fulsome praise. The weapon balances perfectly and has a life and buoyancy in handling that makes one long to throw it to aim some artful dodger of thicket or woodland.



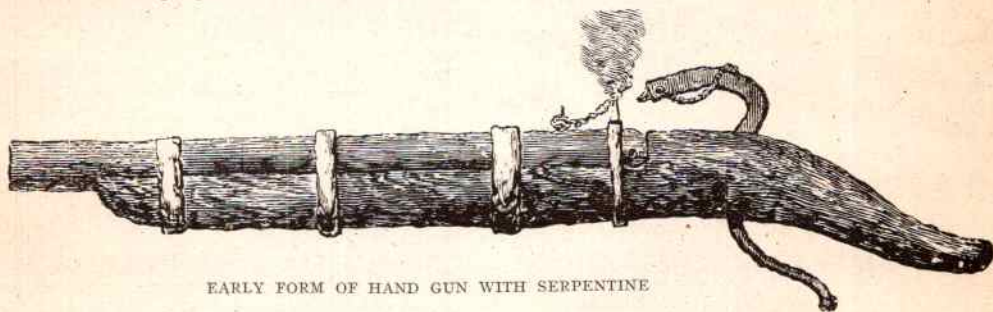
# Gun History and Mystery

## A CHINESE GUN

ANY type of weapon that represents a definite period in the revolution of firearms must in the nature of things possess more than ordinary interest for the Archeologist and the student of powder burning weapons.

The origin and early history of gun-powder is somewhat obscure for lack of clear and authentic information, but enough has been gleaned from the literary works of writers contemporary with its appearance to definitely locate its birthplace in China or India long before the Christian era. Gun-powder made its way to Europe by way of Constantinople about 668 A. D. It appeared in France prior to 1218 and in England about the beginning of the 14th century. Powder mills were established in England during the reign of Queen Elizabeth, and owing to the more universal education of the people, the history of explosives

For the further convenience of the soldier and presumably to afford greater steadiness in aiming and firing, various devices were designed upon which to rest the weapon. The first serious attempt at a firing mechanism was undoubtedly the serpentine which consisted of an S-shaped piece of metal pivoted through the stock of the hand cannon near the breech; the lower curve forming the trigger while the upper curve was pierced with one or more holes through which a fuse, composed of twisted rags or tow, was threaded. To discharge the arm it was only necessary to light the slow burning fuse and by pulling the lower curve of the serpentine, bring the end of fuse into contact with the vent. Some of the later forms of hand cannon were provided with a slow match which was kept burning in a fixture attached to the barrel; with this improvement much time could be



EARLY FORM OF HAND GUN WITH SERPENTINE

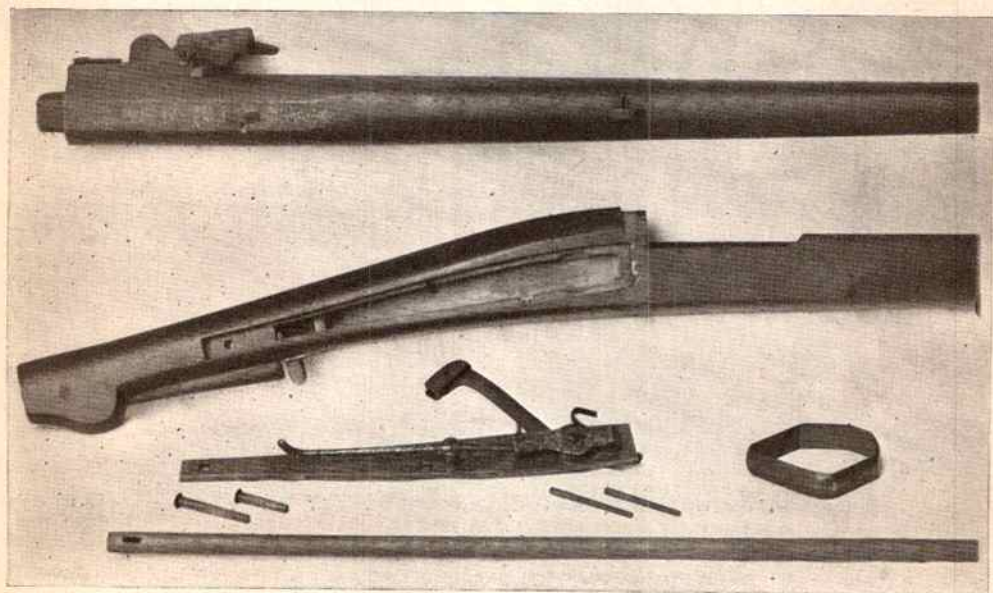
and arms in which they were used is more complete and reliable. Comparatively little is known of the early forms of missile throwing firearms or the methods employed to ignite the charge; but from such information as early records afford we must conclude that the first types were in the nature of rather clumsy ordnance for use in fortifications and ignited by a brand from a convenient fire. The evident need for greater mobility was probably the first incentive towards improvements which resulted in arms of reduced weight known as hand cannons, which at once showed the need for a more rapid and convenient method of igniting the powder charge. With the weapons reduced in weight so that they could be managed by a single individual the method of firing was simply a vent hole at the rear of the powder chamber, to which a slow match was applied.

saved as the serpentine could easily be swung from the slow match to the touch hole. The next logical step in the development of lock mechanism was the application of a trigger. Striking force was not essential and until the invention of the wheel-lock by the Germans in 1515 the simple match lock represented the highest development of early forms of lock-work on powder burning weapons. After the invention of the wheel-lock, and later the snap-haunce or flint lock, which is credited to the Dutch about 1630, it would seem that at least part of the mechanical genius that had formerly been lavished on the cross-bow or arbalest was in turn applied to the lock-work of the more modern powder burning guns and greatly to their advantage. The beautiful old Chinese match lock shown in the cut represents the type of firing mechanism used in Europe just prior



to the invention of the wheel-lock, but as gun powder was invented in Asia centuries before this, we may logically conclude that the match-lock, more especially in its simpler forms, is an invention of great antiquity. The old match-lock shown in the cut, originally formed a part of the official exhibit of the Chinese government at the world's fair at Chicago in 1893. At the close of the fair it was purchased by a friend of the writer who still owns it. This rare old punctuation mark in the story of the gun, is in an excellent state of preservation and shows no sign of having ever been fired. Every part is as relatively well proportioned to the whole as some more modern and pretentious arms and

muzzle of exquisite workmanship. The under side of the barrel is equipped with three lugs in the form of segments of a circle which fit into corresponding recesses cut into the groove of the fore-end. These lugs with the fore end are bored transversely and the barrel and stock are fastened together with strong tapering brass pins driven in friction tight. There is not a screw of any description used in the construction of the arm. A curious feature of this antique arm is the flash pan; it is placed on the right side of the powder chamber and like the projecting lugs, is forged solid with and is part of the barrel. The vent hole enters from the top of the flash pan and pierces the powder chamber



CHINESE MATCH LOCK DISMANTLED. UNDER SIDE OF BARREL SHOWS CHINESE CHARACTERS. STOCK, LOCK, ASSEMBLING PINS AND RAMROD

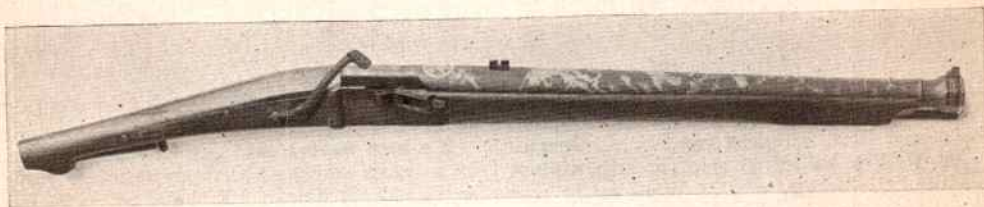
the effect is altogether pleasing to the eye. The weapon measures 43 inches over all and weighs 14 pounds; not heavier than some of our modern Schuetzen rifles. The barrel is 27½ inches long and tapers from an outside diameter of 1½ inches at the breech to 1¼ at the muzzle; it is forged from a single piece of metal; the breech end is solid and terminates in a square tenon ¾ of an inch long, which fits into a mortise in the hard wood stock when the gun is assembled. The barrel is round except on top, which has a flat sighting surface extending from breech to muzzle, conforming gracefully to the symmetrical taper of the barrel. The muzzle end is of extra thickness and is beautifully ornamented with an octagon cannon

at the rear nearly at a right angle. A slight counter sink of the vent hole forms the priming cup which will hold about three grains of fine priming powder. The bore is exactly the diameter of a modern 12-gauge shotgun, it is bored smooth and is uniform in diameter for its entire length including the chamber. The stock is made of a single piece of an extremely hard and close-grained light colored wood, probably a species of Chinese white oak. It is full length, has a drop at the heel of 3½ inches, tapers nearly to a point, is protected on the end by a brass angle plate, and in general appearance is not unlike a Chinese stringed musical instrument. The stock and barrel are as carefully fitted at every point as a high grade modern gun. A



noticeable feature in the fitting of the wood work is an extremely fine saw-cut in the fore-end extending lengthwise from the broad brass band that encircles the stock and barrel at the breech, to within four inches of the muzzle end. This cut does not extend through to the barrel groove but is of just sufficient depth to permit the timber to spring apart and allow the barrel to

powder to target." All that part of the barrel not enclosed with wood, including the ornamental muzzle, is artistically inlaid with silver figures representing mysterious Chinese heraldry, sprawling branches of long-leaved Chinese fir, fantastic bird forms, suns and moons, and mushroom shaped things that only the unfathomable mind of a Chinese artist could conjure into

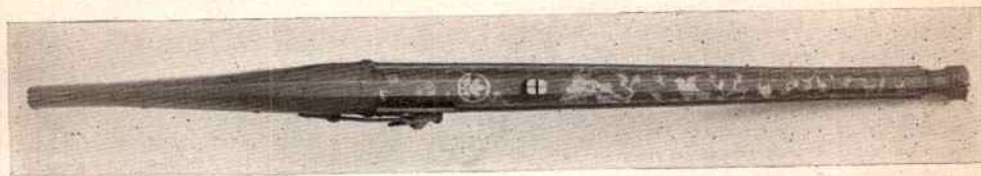


CHINESE MATCH LOCK, COCKED, WITH FLASH PAN

be pressed snugly into its bed under considerable pressure. This ingenious scheme, supplemented by the three brass pins through the lugs, unites the heavy barrel and its stock with time defying security. A neat, well fitting brass cover hinged to the flash pan effectively protects the priming when for any cause the fire is to be withheld. The entire lock is of brass and is simplicity itself; it is set into the side of the stock flush with the surface and like the barrel is held in place by a broad band of richly colored old brass and tapered brass transverse pins

forms of beauty. For about four inches the under side of the barrel near the breech has a flat surface corresponding to the top or sighting plane; this space is covered with Chinese characters, evidently hand engraved, as the tool marks are plainly visible; four or five letters of similar form are printed with india ink on the inside of the barrel bed in the fore-end.

Through the courtesy of an intelligent disciple of Confucius, who presides over a local chop suey joint, the nervous looking tea sign hieroglyphics were induced to give up their



TOP OF BARREL, SHOWING SILVER INLAYING

which, when pushed into place, engage broad brass burrs set deeply into the stock on the opposite side. A shapely front sight of iron or steel is set into the top square of the ornamental muzzle and a strong stud slotted laterly, from which the rear sight is missing, proves that our oriental brethern had a few ideas of their own in regard to directing "The bullet's flight from

hoary secret. Sam Toy says it is a very old Chinese gun, from the government arsenal at Peking. It was made during the reign of King Lung, who belonged to the sixth dynasty back of Chinese kings. This history, brief as it is, would be valuable if it could be verified, as it would help to establish the chronological position of the match lock of the original gun makers.





# Practical Advice on the Shotgun

By A. G. HOLMES

## PART II

PROBABLY the best way to illustrate the difference in grips of shotguns is to say that the Parker Bros. full pistol grip, W. W. Greener or A. H. Fox half-pistol grip (or grip without cap) and the straight grip as found on the new Winchester Tournament guns are as good types of regular grips as are on the market today in their respective grades. Greener puts on the smallest grip of any gun maker the writer has found and it is very pleasant to handle, being extremely well made and correctly proportioned in every part. Some of the older model pump guns had a heavy grip, so that it was almost impossible for a man with a small hand to get a grip on them, but they have put on a good deal neater grip lately, although the Brush gun, as made by the Winchester Company always had a nice, small, well feeling grip. Go to any large tournament and you will find among the different shooters a great diversity of opinion as to individual guns used by contestants. They have good points which each shooter has found best adapted to his needs or is experimenting to improve himself if possible, by getting a gun he can handle with the greatest confidence, and one has only to look at the scores hung up in any large tournament to find that no one gun takes all the plums. Trap loads for targets have simmered down to a stock of loads carried in most any well informed dealer's hands that will be found to give the best satisfaction; the main difference being of bulk or dense powders and medium or high grade shell as the Leader and Arrow and Nitro Club and Repeater, but most shooters use the 25-grain load in dense and 34 dram load in bulk and a shooter will find they give good satisfaction if he holds right and shells are fresh.

The field gun is in several gauges and is not confined to any weight, length of barrels or style of gun.

The 12-gauge is undoubtedly far ahead in number with the small bores running up rapidly nowadays.

It is unnecessary for a man to weight himself down with a heavy gun; and shells weighing more, to kill the game as found in the field nowadays where one has to tramp over field and marsh and woods.

A gun feels light at the start, but by night the weight has increased fourfold.

If a man wants a field gun for shooting inside of 40 yards and most likely inside of 30 yards, he should not have a full choke unless he uses Brush or scatter loads. The gun for ordinary field work properly ought to be bored a light modified choke or improved cylinder right barrel, and a moderate modified choke left barrel, and if a pump or automatic gun then an improved cylinder or very light modified choke. The gun should never shoot over 60 per cent in any instance and probably 55 per cent would be better still.

As to weights of guns would say a gun may weigh from 5½ to 7½ pounds and the barrels run from 26 to 30 inches in length, but it would seem that 28 inches is about as long as necessary to make a nice handling gun, for if the barrels are cut to 26 inches in a 12-gauge they appear stubby and not in proportion to the rest of the gun.

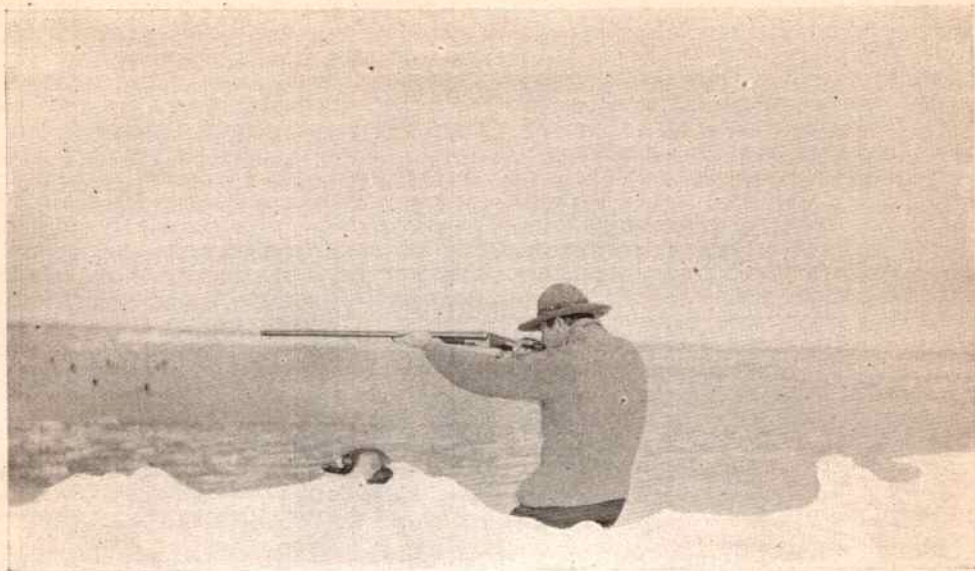
The writer has used a 6 pound gun made by Francotte with 26-inch barrels that was very satisfactory, but would prefer one a little longer in that gauge and could never see much sense in cutting down the load to about that of a 16-gauge when a 16-gauge would answer the same purpose and be a better proportioned weapon in that weight with shells lighter to carry and costing less money.

The 16-gauge has been overlooked by many people as has the 20-gauge, until lately, now they are coming into high favor.

The writer has seen a 16-gauge made up with long barrels that gave a good account at the traps on both live birds and targets, killing 47 live birds out of 50 and good runs on targets, but it is not a trap gun.

However, in a field gun the 16 and 20-gauge should be placed at the head of the list as they are light, handy, hard shooting weapons, ammunition costing less, and lighter in weight, and will kill as far as any other gauge will, when properly pointed, but of course will not have as large killing circle as the larger bores with ¼-ounce of shot more, but nowadays a sportsman finds his shots are at single birds as a rule, and he refrains from firing in the thick





THE AUTHOR SHOOTING FROM A SITTING POSITION

of a flock of any game trusting to luck and a big shot spread.

The writer has before him now a 20-gauge made by Hunter Arms Company that is made for work in the field and marsh and am informed such a gun gives very good results on duck in ordinary range over decoys and in the ponds and sloughs of the South and West.

As this gun is one of the new creations of America's manufacturers which they are now pushing, it may be interesting to know the dimensions which are as follows. Weight, 6 pounds 14 ounces; barrels, 32 inches long, of steel and full choked, chambered for 2 $\frac{1}{8}$ -inch shells; gun is automatic ejector and fitted with a single trigger; stock full pistol grip, safety independent. The gun handles perfectly and the long barrels really are more pleasant to look over than the shorter ones.

As most men's guns are made in this gauge, the barrels would seem out of proportion, but when one has the gun in hand it seems as though it were well nigh a perfect gun for open field and marsh work for which it was intended. There are two sets of barrels, the other being 28 inches long, both modified choke, one a little more open than the other, which is for use in the brush.

There is only one thing which could be improved and that is the grip, which is made too heavy, to suit the writer, in that gauge. It should be smaller around the grip and the pistol grip should be curved more to fit the hand better, or else eliminated entirely, having it straight.

The time is coming and, unless the writer is wrongly informed, the year of 1911 will show one, if not more, automatic shotguns in 16 and 20-gauge and undoubtedly a repeating gun in small bore and we trust that they will improve these weapons in outline and have weight in proportion to the gauge and not heavier than a 12-gauge. The 16-gauge has always been a favorite with the writer and he has found that in the hands of a fair shot it could be depended on to take care of its end always, no matter what it might be called upon to do in the field. The 20-gauge has long been a favorite gun with the English people in far away India for snipe and native birds where these long barreled 20's have been given unstinted praise by their users and it would seem that these men who have written of that country's sport where work in heavy marsh and rough country calls for strenuous exercise should select such a gun that we could do well to profit by their experience. The 20-gauge or 16-gauge will show as much velocity with its standard load as the 12 or 10-gauge and, in fact, some makers declare it will give greater velocity.

Take the game shot in the field, chicken, quail, snipe, plover, partridge, woodcock and rabbit, as well as squirrel and other small game. Look over the days you have spent afield and see how many times you can recall that you have needed the extra weight and heavy 12-gauge ammunition over that of the smaller bores. Mighty few times, I wager, not enough surely to cause the discomfort of those extra pounds which got heavier every step, when we



hope the game pockets were filling up satisfactorily.

To those who are now figuring on the coming year for a new gun, the writer would suggest that you ponder over the small bore carefully, try them on targets (paper for patterns showing spread) and if you get a chance try them on crows, black birds, or if you are able to trap a few sparrows, use them for live targets. You will be happy, I am sure, and will have a wholesome respect for the 16 and 20-gauge, and if they are full choked, they will do good service on duck in the ordinary range but will not have the large spread of scattering pellets to scratch down some outside birds; but these birds which are so often hit by the outside edge of the load are only wing tipped and are lost too often to be considered as worth while to cripple such fine birds, only to lose them.

The following is a letter relative to small bores, as given by Parker Bros., and illustrates as well as anything could be, how this enterprising company feel regarding them:

"The ever increasing demand for small bore guns, particularly of 20-gauge, having reached such unlooked for proportions, we are setting forth this circular letter, thinking it may prove of sufficient interest to warrant its perusal by those contemplating the purchase of these now deservedly popular and efficient little guns; and while it is not intended to detract from the inherent power and acknowledged superiority of the larger gauges, yet, under certain conditions, and in some kinds of shooting, these smaller calibers can in all fairness be said to easily hold their own, possessing as they undoubtedly do, some attractive features that must recommend them to the favorable notice of progressive sportsmen.

"It is generally believed that a 20-gauge is a very close shooter, and that none but the best shots can ever hope to shoot well with them. This is an error, as a 20-gauge, when properly bored, can be made to cover a 30-inch circle at 25 yards when so desired, and when we consider that the normal charge of  $\frac{7}{8}$  of an ounce of No. 8 or No. 9 shot can be made to do this, we certainly cannot find much room for complaint. On the other hand, a 20 can be so choked that at 40 yards it will account for 65 per cent of its charge in the same circle, even when loaded with full charges of  $2\frac{1}{2}$  drams bulk nitro powder and  $\frac{7}{8}$  of an ounce of shot.

"It is quite apparent therefore that the gauge of the gun does not operate against the shooter by handicapping him in his shooting, because by having his 20 built and bored according to his special requirements, he can be supplied with a most useful and highly serviceable weapon, whether he use it at quail when shooting from 15 to 25 yards, or at snipe up to 40 yards, although of course no gun, whatever its caliber, can be

expected to do its best work at minimum and maximum ranges; so to be prepared for any emergency, either two pairs of barrels have to be used, or else an all around gun with one barrel cylinder and the other full choke, will be found to answer almost any purpose.

"A very light gun of its gauge can never be recommended because if loaded to the full capacity of its caliber, it is sure to give a great deal of recoil, always disastrous to good and consistent shooting, and generally accountable for more bad shooting than all other causes combined. These remarks apply to guns of all calibers, so allowing this to be a fact, we will place the 20-gauge required for actual service at between  $5\frac{1}{4}$  to  $5\frac{7}{8}$  pounds as its minimum weight, and if it is to be used with  $2\frac{1}{2}$  drams bulk nitro powder and  $\frac{7}{8}$  of an ounce shot, then 6 to  $6\frac{1}{4}$  pounds will always make a more pleasant one to shoot, and still be light enough to be carried day in, day out, without discomfort or undue fatigue.

"Coming to the all important part, as a game killer, a most thorough test made over the chronograph shows that the 20 holds its own very well as compared with the standard 12, as these figures will prove: 12-gauge Parker gun, 37 grains Dupont,  $1\frac{1}{8}$  ounces No. 7—921 feet. 20-gauge Parker gun, 32 grains Dupont,  $\frac{7}{8}$  ounce No. 7—941 feet. These records were taken over a 100-foot range, and as both are standard game loads the comparison can be regarded as a fair one, with the advantage slightly on the 20-bore side of the ledger.

"Regarding the length of barrels a 20 should have, that is merely a matter of individual choice, just as it is with guns of other gauges, but the great preponderance of opinion leans towards 28 inches when most of the shooting is to be done in thickets and cover, and applies particularly to quail, woodcock and ruffed grouse shooting. If on the other hand the gun is to be used principally on open prairies or marshes, at duck or grouse, or in fact any kind of game that is shot at in an open country, then 30 or even 32-inch barrels, full choke, regulated to shoot close as possible and chambered for long shells, should be used, for while a long barreled gun may not outshoot a shorter one to any marked degree, yet there is positively no doubt but what the former can be aligned much more accurately, more especially at long range where most of the above kind of shooting is generally done.

"It may be said that when first the small bore Parkers were introduced, many looked upon them with distrust and suspicion. These handy little 20-bores are fast becoming more universally used as their intrinsic value is better understood, and it is with the utmost confidence that we recommend them for all kinds of upland game shooting, basing our recommendation on





RETRIEVING ON GREEN BAY WITH A CANOE

a wide range of many years' experience in gun making, backed by volumes of voluntary and unsolicited testimonials coming from our patrons whose words of unstinted praise have strengthened our own convictions that the term "Old Reliable" is just as applicable to our 20-bores as it is, and always has been, to our guns of larger gauge."

In a letter to the writer they state they have made a number of guns for sportsmen in Canada for duck and prairie shooting which have given the greatest satisfaction and there are a great many of these small bore guns used in Texas for duck shooting where they are highly recommended by their owners.

Give them a trial, boys, and give the game a chance by trying to cleanly kill your birds and not pot them or turn loose into a flock crippling and losing half of those hit. Be a sportsman.

Regarding new small bore guns for field use the A. H. Fox Gun Company will put out late this season a 16 and 20-bore and it goes without saying that they will undoubtedly be exquisite weapons as their well known 12-gauge is. They have one of the best systems in existence for gun making and the writer has never seen one that was not perfect in every detail.

In repeating guns for this work as before stated, there is every likelihood of a small bore automatic and another small bore pump gun coming on the market late in the season which will fill the need in that direction, if the gun is

made in proper weight and not on the heavy frame.

The writer shot a 20-bore Ithaca, the other day and it is a fine, handy little weapon, although a trifle light to suit the writer with the loads he was using. He believes it could be a half pound heavier or at least a quarter pound heavier, to take up the recoil and make a steadier handling weapon, as one is liable to throw his gun off and out of alignment on such a very light weight.

For the price, however, the little field gun is good and should meet with instant approval with a large body of shooters who want a light small bore gun for a reasonable price.

Loads for the field work will undoubtedly be worked to a higher efficiency within the next few years and we will not be troubled as much with cartwheel patterns in open bored guns and other unaccountable misses which are caused by imperfect performances at the closer ranges.

One finds that when shooting at the closer ranges with the open bored guns he will have many patterns which have no shot in the center of the target, causing a cartwheel pattern from the gas blast driving the wad practically, if not entirely, through the shot as the gas blast is more noticeable in the open bored gun than in a close bored or choked gun, as the choke retards the wad, allowing enough time to elapse for the shot to get beyond the muzzle and away from the wad, to a greater extent than in the cylinder gun.





THE TOP OF DR. OLSON'S CONVERTED RIFLE

## Another Transformation of a Springfield

By A. S. OLIVER, Jr., M. D.

UNDER a very similar heading Mr. Crossman has been giving the "rifle cranks" a most entertaining description of how he and several colleagues have wrought changes in the service arm to meet the requirements of a hunter and sportsman. These articles will no doubt inspire many, who heretofore have been scared away from the New Springfield by its appearance and accessories necessary to a military arm, to take steps to procure the service arm for use as a hunting rifle. Those who have had opportunities to try out its high velocity ammunition and its accuracy and get acquainted with the strength and simplicity of its mechanism won't look with the same favor on the old popular and much advertised idol—the .30-30. Indirectly this may prove of much benefit to Uncle Sam in case of war by encouraging many private citizens to obtain and become familiar with our national weapon of defense. 

Unfortunately, however, many of us are so situated that we cannot indulge our fancies to our heart's delight—as well as spare the necessary cash—in sending to the various corners of the globe to obtain the necessary material and employ an expert artisan solely to bring about the beautiful results Mr. Crossman has obtained. So it is my object in "butting in" just at this time to describe how I have "mutilated" my New Springfield in attempting to change it from a "piece of cord wood" with an iron tube through the middle to an acceptable sporting rifle. However, I am not trying to

ridicule its utility, as now put up, for a military arm, but criticise from the stand-point of one who enjoys hunting and uses a rifle for such purpose only.

I procured a star-gauged Springfield in the spring of the present year. I hadn't possessed it twenty-four hours before I made up my mind as to two things I would change even if it ruined the rifle and another one had to be obtained; i. e., shape and weight. The latter is more than one cares to lug about over a rough country and the former will dampen the enthusiasm of any sportsman. I have been working changes from time to time until I have obtained a most unexpected result. I began by removing the heavy steel part for the attachment of a bayonet; then by lifting off the top walnut piece a handsome round blue tapered barrel is exposed. The lower forward end of the stock is cut off one-half inch forward of the middle sling-swivel and the latter removed. The lower end of the bayonet attachment is now hack-sawed off so as to leave only the thick ring which fits closely to the top of the barrel—about one-quarter inch wide—and a band about one-half inch wide for the under half. This leaves the forward swivel ring unharmed. Now trim down the shoulder left by the removal of the middle swivel so that the part just made will fit snugly—it is first necessary to flare the upper portion a bit in order that it will come down closely on the barrel which is much larger at this point. Next if like myself, you don't care for the heavy



military sight, take the rifle apart, which is easily done with a screw driver, and drive out the stop-pin on the under side of barrel and by light tappings with a block of wood the sleeve holding the sight slips off. Remove the tip of front sight to get over end of barrel.

It will now be seen that the stock doesn't fit the barrel closely. To overcome this two thin strips of walnut from an old piece of furniture were cut to fit the barrel on either side and glued to the inner surface of the stock. Now reassemble your rifle and begin on the stock. From

again when working on stock. Begin by cutting back the comb almost  $\frac{3}{4}$  of an inch and heighten it by cutting sharply into the grip. Now with a wood-rasp reduce the size of the grip on upper surface and sides only; gently sloping backwards to a circumference of  $5\frac{1}{2}$  inches just in front of the comb. Remove the steel butt-plate—it weighs over 5 ounces—and procure a better shaped second-hand hard rubber shotgun butt-plate from some gunsmith. Mine is from an Ithaca gun and measures  $5\frac{1}{4}$  inches by 1 7-16 inches. The stock is too short for most of us



RIGHT SIDE OF THE CONVERTED SPRINGFIELD



LEFT SIDE OF THE SAME REBUILT GUN

the forward end of the magazine give it a gradual slope to the improvised clasp and swivel-ring. You will be surprised how much can be taken off and at the corresponding change in appearance—the upper half of the barrel showing throughout and the forward end left exposed for 14 inches. The resemblance to a Mauser becomes striking.

Now the ungainly short, shapeless rear portion of stock—it looks hopeless. The pleasing results on the forward half of rifle seems marred and useless. But don't lose courage—you can't make it any worse. Better to disassemble the rifle

and to overcome this I glued a piece of walnut  $\frac{3}{4}$ -inch thick in the middle to the stock, scooping it out to fit the rounded ends. The butt-plate is  $\frac{1}{4}$  inch thick, which makes the distance from the trigger to the middle of butt 13 $\frac{1}{2}$  inches, the distance which just fits me individually. Attach the butt-plate carefully with wood screws that penetrate well into the stock; this will render the extension strong enough to withstand any reasonable strain. Reduce the thickness of the stock to correspond with the butt-plate. Mine measures 1 $\frac{1}{4}$  inches through the thickest portion. Oil or varnish the wood parts to suit individual taste.



Reassemble your rifle and place a rest under the middle—you haven't hurt the balance; mine loaded balances  $1\frac{1}{4}$  inches back of the middle—stand away 10 feet and "size her up"—an imported Mauser? No—a "metamorphosed" Springfield—and no outside material used except a second-hand butt-plate—50 cents.

In place of the heavy military sight I have substituted the Winchester Folding Leaf sight by boring two shallow holes in the barrel and attaching a base of soft steel with slot for sight. This gives sufficient accuracy for hunting purposes up to 500 yards. The bright surface of the barrel left by removing the old sight will have to be blued by some foundry of course.

How about weight? Well, from about 8 $\frac{3}{4}$  pounds you have reduced the weight to 7 pounds 2 ounces if the sling swivels are removed to compare with the usual rifle and to 7 $\frac{1}{4}$  pounds if you keep them on. This cuts some "figure" on long "hikes" and in the ease of handling. It also compares favorably with the recent Mauser described by Mr. Glasgow to use the '06 cartridge; the model with 24-inch barrel weighing 7 $\frac{1}{2}$  pounds.

So much for the "metamorphosing" of the New Springfield. There is one serious draw-back to its use and that is metallic fouling. It makes one sick to look down the muzzle after a few shots and see the "stuff" caked for a foot or more along the rifling. It also makes one less inclined to take the rifle out for a little practice when you think of a week's work with strong suffocating ammonia or nitro-solvent oil to again get the barrel in first-class condition. However, we learn from recent tests by Dr. Hudson that we may some day be relieved of this nuisance. A reduction in the diameter of the bullet according to the Ross idea seems to "fill the bill." But it may be considerable time before such ammunition is obtainable. I have tried almost every form of lubricant recommended—mobile-lubricant, with and without graphite, etc.—but all to no avail.

Recently I have had an experience which so far as I know is a new one. I took my "metamorphosed"—this word is very catching—Springfield out to try the new sights. It was snowing lively and later became quite heavy. Every time the magazine was opened or loaded the snow poured in. However, I kept shooting and used 25 cartridges in all. On returning home I drew a rag through the barrel and took a "squint" down the muzzle to see how much work I had to do. What! No fouling? Not only that but the considerable patch I had failed to get out after the last shooting had disappeared. Queer. What did it? Snow? Surely not; yet this never happened before, nor had I shot the rifle during a snow storm. I couldn't pass this by lightly. It had saved me

too much "elbow grease." A few days later I took a jaunt into the near-by woods. It wasn't snowing so with a faith born of hope I dipped the bullets into the snow and filled the magazine also inserting one in the chamber. The snow quickly melted leaving several minute drops of water on the bullets. I fired about a dozen cartridges before returning home. I pulled a rag through the barrel removed the bolt and peeped in the muzzle—clean "by gosh." But I wasn't satisfied. It may be that some unnoticed accident had caused this wonderful change. I will find out for sure next time. After a few days of grace I shouldered the New Springfield and took to the "tall timbers." I made sure the barrel and bullets were bright and dry. Stuck a piece of paper on a stump and stepped off 125 paces. Bang. Drew a rag through the barrel and looked—that bullet had left plenty of fouling all right. Repeated this performance twice and by that time there was plenty of metal on the lands. I looked about for some snow but there was none in sight. It had all melted. I found a little puddle of clear water, however, and dipped the bullets of five cartridges in it and loaded up the magazine. By the time I had reached home I had emptied the magazine by shooting at various objects along the way. Then wiping out the barrel I found it clean. Evidently the little water on the bullets had been the cause, not only of keeping the barrel clean, but also aided in moving the fouling already existing as another bullet came whirling along. How about accuracy? As near as I could tell there was very little if any influence on the course of the bullet. However, I have not been able to test this thoroughly and would be glad to hear the result of a test over a good range. How do we explain this action of a little moisture when the best lubricants are of little or no use. What is the physics of it? I would like to hear from some of the other experimenters on the subject. I offer this explanation, viz.: owing to the extremely tight fit of the Springfield bullet and its high velocity friction must be so great as to burn up any lubricant we have knowledge of thereby preventing any action to lessen the friction. But water we know is incompressible and the small amount that gets between the bullet and the barrel reduces the friction sufficiently to prevent the rubbing off of the metal jacket. Is the water converted into steam? Probably the high pressure it is under prevents this. I simply relate this little experience in the hope that it may lead to further experimenting by others and the acquiring of more "dope" for the insatiable "rifle cranks."

I also hope that this little article may prove of some aid to the reader of the Outer's Book in case he decides to "metamorphose" his New Springfield.



## Target vs. Snap Revolver Shooting

WHEN Mr. Butler in the October and Mr. Newton in the December OUTER's suggested a trial of the Topperweins' skill at the regular revolver target distances, they opened up an interesting line of discussion. In my comment upon the two letters I indicated my personal views in the matter. I am now in receipt of two letters on the subject, one from Capt. A. H. Hardy, the Peters Company's expert, the other from Mr. Topperwein himself, who, as is generally known, represents the Winchester Company, while his wife, who figures equally with him in the debate, represents the American Powder Mills Company. Capt. Hardy says:

"It was with considerable interest that I read the articles in your Gun and Ammunition Department referring to the shooting of the Topperweins, and your excellent reply in the December number, which covers the field so well that I feel that it is scarcely necessary to make any further reference to the matter. In justice to the Topperweins, the merits of whose shooting some of your readers and contributors seem to question, I submit the following simply as an explanation: The Topperweins are employed by large powder and gun companies to demonstrate the accuracy, dependability and cleanliness of their vast product. Their exhibitions are entirely free to the public and they have developed a programme which their many years of experience has taught them, will please the people. Their object is not to shoot matches with other people at any particular style of shooting. One of the objects of these very interesting exhibitions is to encourage the healthful and fascinating sport of shooting and to show the degree of skill in the use of firearms that may be acquired by any one who has the patience to practice sufficient to master the game. Neither of these truly wonderful shots claim to be the champion revolver shots of the world; they merely bill themselves as expert shots and their performance fully justifies their title. Neither Mr. nor Mrs. Topperwein has ever practiced at the Standard American target any more than to shoot perhaps a few targets for their own amusement. The reason they do not practice this style of shooting is because their daily routine of work on the shooting circuit does not give them an opportunity. Their regular programme requires constant practice, and stationary shooting at 20 and 50 yards would not be as entertaining for the people whom they appear before as the more spec-

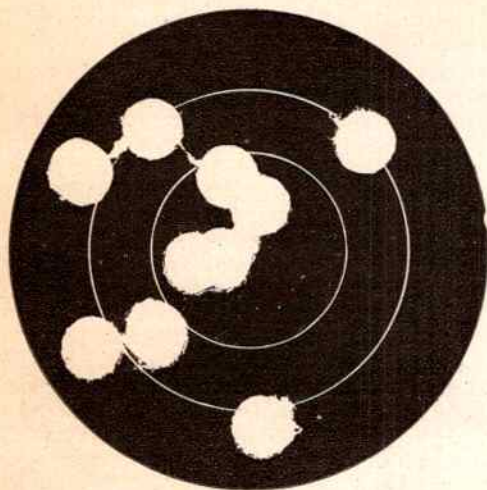
tacular performance of rapid fire at flying objects. How many of the audience of thousands of people before whom they shoot daily would know whether 90 per cent on the Standard American target would be about all that could be expected and how many of our action and excitement loving Americans would remain fifteen to thirty minutes to see a score of ten shots finished? Furthermore, their exhibitions are given in all kinds of wind and weather and under such conditions such as would render fine shooting at stationary targets, out of the question. The object of the Topperweins is to put on a line of work that is at once spectacular and pleasing, to show the wonderful rapidity and dependability of the action of the weapons used by them. Their work is done in the open, their guns and ammunition may be freely examined by any one who may be interested and there is an entire absence of the trick paraphernalia which is the usual accompaniment of the stage expert and trick shot. The kind of shooting done by experts like the Topperweins calls for as high a degree of skill, of a kind as difficult to acquire as that of the stationary target expert."

Mr. Topperwein goes into the matter more at length, as follows:

"I have read with much interest in the October and December numbers of Outer's Book the articles in your Gun and Ammunition Department in reference to revolver shooting. Both gentlemen are evidently of the opinion that the revolver shooting, such as Mrs. Topperwein and I do in our public exhibitions, does not amount to much, and that the *only* real test of revolver marksmanship is shooting at the standard 20 and 50-yard target. Both of these gentlemen express the desire to see some of our scores compared with other experts, and one of the gentlemen makes the modest request that some of our scores be published in comparison with twenty of the best scores made in the last matches of the United States Revolver Association, so as to give us *due credit* and give us a standing among shooters. In the first place I will say that neither Mrs. Topperwein nor I have ever laid claim to the word "champion" in any branch of shooting. Our critic ought to have added that he wanted some of our best 1000-yard scores so that he could compare them with some of the best rifle records made at that range at Camp Perry or other military shoots, to give us a standing among riflemen. Pistol



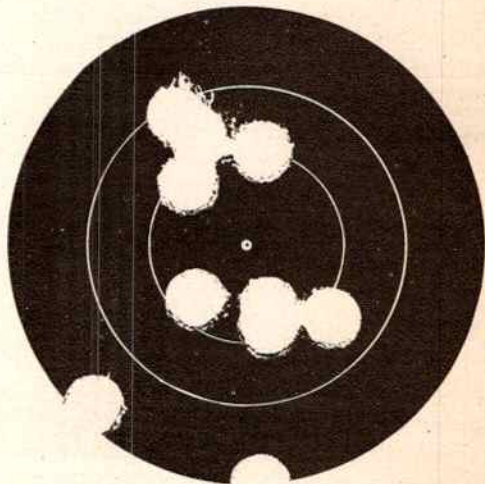
and revolver shooting, like shotgun and rifle shooting, have their different branches. Shooting a revolver at a black spot on a paper target at a certain distance is one way, and snap shooting at close range is another and more practical. Both require a lot of hard practice. The



MADE WITH A SMITH & WESSON .38

revolver is strictly a one hand gun, intended for close range work and self defense. I would rather be able to put six shots into a six-inch circle in five seconds at fifteen paces with a single action revolver, than to be able to make a good score at fifty yards and use up five or ten minutes in doing so. Neither Mrs. Topperwein nor I make a practice of shooting over fixed ranges at stationary targets, simply because we have adopted another style of shooting, one which attracts the public and earns us our bread and butter. We are engaged by our companies to demonstrate modern ammunition loaded with smokeless powders. We must entertain the general public and not just the members of the United States Revolver Association with an exhibition of fancy and practical shooting with rifle, shotgun and revolver. Should we ever be foolish enough to attempt to do this with an exhibition of shooting at a fixed target at known distances with rifle or revolver, our services would be absolutely worthless to our companies, even though we could become expert enough to make wonderful scores with the rifle at 200 or 500 yards and the 'possible' at 20 and 50 yards with the revolver. It is for this reason we do not make it a practice to shoot at the ranges as specified by the United States Revolver Association as our own work and traveling keeps us busy. I cannot see why Mr. Newton should question our ability, simply because we do not practice his favorite style of shooting. Per-

sonally I have great respect for the man who can keep his revolver scores well up in the 90's and I am happy to say that I have among my personal friends some of the best shots at this game in the world; however, I would hardly ask these men to demonstrate their skill at rapid fire, short range shooting and ask them to score 90 per cent or better at moving objects, or make a decent percentage of hits at other kinds of snap shooting, and still I do not condemn them or their style of shooting, and do not question their standing as marksmen. There is a goodly number of revolver shots who can score 90 per cent, or better, at 20 and 50 yards, but comparatively few who can score 90 per cent at moving objects, and I know that the public would rather see Mrs. Topperwein shoot empty shells from my finger tips and cut cards held edge ways at ten paces, or see her "better half" hit a marble in mid-air, or make a double with a single action revolver, than to see the best revolver shot of the United States Revolver Association make a possible at 50 yards. I do not mean to say that ours is the best shooting, but the general public demands something different than simple target shooting. The United States Revolver Association has done much to make pistol shooting popular, but practical revolver shooting consists of something besides shooting at stationary targets and I dare say, that if more of our revolver shots would practice our style of work, they would



MADE WITH A COLT .38

find it perhaps a little more difficult than most people think, but also more fascinating and certainly a great deal more useful."

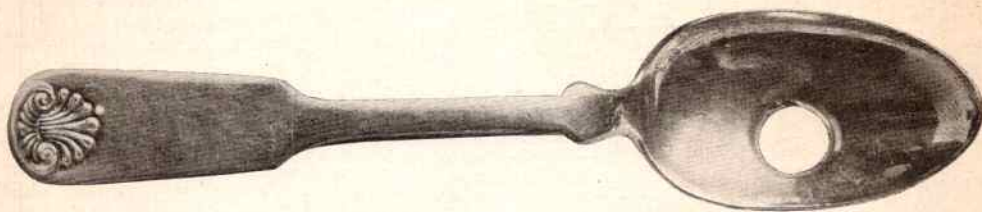
As a result of this discussion, Mrs. Topperwein recently made a test at stationary targets, and the two targets were mailed to the OUTER's.



As all the shots in both targets were all in the bullseye we reproduce that part only, reducing the bull from  $2\frac{3}{4}$  to  $2\frac{1}{2}$  inches to fit our column.

Pistol experts, who are able to duplicate this work, and amateurs who are patiently striving to acquire the skill that will enable them to duplicate it, will appreciate these targets. One was made with a .38 Colt revolver, the other with a .38 Smith & Wesson revolver with target sights. The 20-yard targets were made at Mrs. Topperwein's home in San Antonio, Texas, at the full distance of 20 measured yards, out of doors without shelter or shade. These are the first two scores at this style of shooting that Mrs. Topperwein has shot in about a year. They were both made on the same day, Nov. 30, 1910, and being shot with the weapons regularly used by herself and Mr. Topperwein in their daily exhibitions; the degree of skill represented

at only two showed a deviation from center sufficient to break the metal on the edge of the bowl. The weapon used was a single action .44 caliber Smith & Wesson revolver equipped with target sights and having a good practical trigger pull. The load used for this work was the short range or gallery load regularly loaded and sold by the Winchester Company. Shooting of this kind requires a high degree of skill, faultless vision, a clear head, nerves of steel and supreme confidence in ones weapons and their load. Snap-shooting with rifle and pistol is distinctively an American game, developed by generations of hardy intelligent and practical men, under conditions which made it a necessity. To attain a degree of proficiency with firearms that will enable one to hit moving targets with reasonable certainty, presupposes long training, and familiarity with firearms. In learning



ONE OF A DOZEN JUST AS GOOD

by these targets comes near being what might be called a gauge of her skill with the six-shooter under average conditions. The cut of a perforated teaspoon, also shown in almost full-size, a very slight reduction being necessary to make it fit the page. The spoon was one of a dozen shot at by Mrs. Topperwein during one of their exhibitions in Milwaukee a few months ago, at which the writer, in company with several gentlemen who were themselves expert amateurs with firearms, was an interested spectator. The spoons were held in the naked hand of Mr. Topperwein while being shot at; a square piece of card board was placed on the handle close to the bowl to protect his eyes and hand from a possible splash from the bullet; the handle was fully grasped by the hand leaving only the bowl as a target so that an inch lateral deviation would result in an abbreviated finger and thumb for Mr. Topperwein. Of the dozen spoons shot

to use firearms, as with everything else, we naturally begin with the fundamental exercises which in this case means practice at stationary objects. It would be absurd for the beginner to attempt to hit rapidly moving objects or flying targets with rifle or pistol before having mastered the less difficult feature of the marksman's art; therefore we must naturally conclude that one who is proficient in the more advanced stages of the game cannot be wholly unfamiliar with the less spectacular but scarcely less essential features of fixed target work. An exclusive target shot who spends his time trying to squeeze out just one more point on the fixed target; not only makes but little progress beyond the arbitrary line of his own limitations, but he never realizes the possibilities of the one hand gun, as a weapon of offence or defence, or the fascination of shooting it in that department of the sport in which its mobility makes it a favored arm.





# Photographs at a Speed of Five Thousand a Second

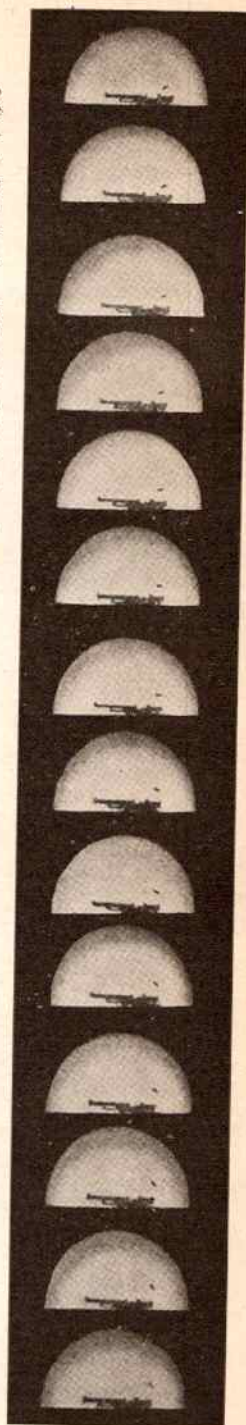
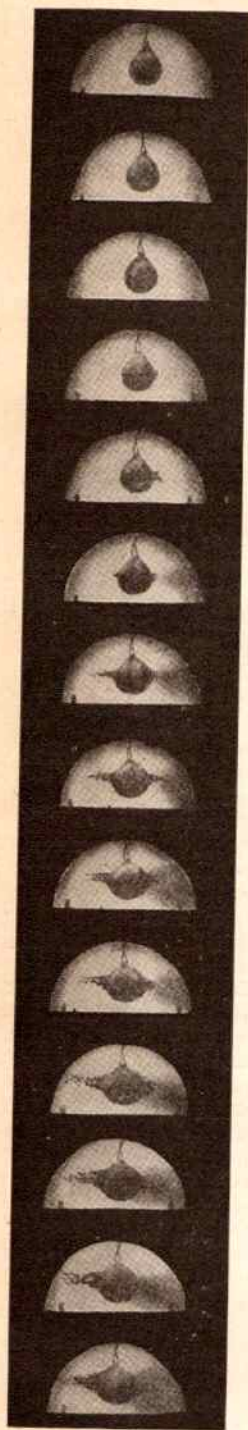
Sections of two extraordinary moving picture films, one of a used cartridge being thrown out of the chamber of a revolver, and the other of a bullet approaching and passing through a ball of clay, taken at a speed of 5,000 per second, are shown in the illustration. In the former the cartridge may be seen rising higher and higher into the air, and in the latter the projectile is seen approaching at the right, entering, and coming out on the other side.

It is electricity that has made possible the taking of photographs at this tremendous speed of 5,000 a second. The photographs were taken by a German scientist, the object being illuminated by an electric spark for a period varying between one millionth and one ten-millionth part of a second. The apparatus resembles to some extent a wireless-telegraph outfit. An alternating current, passing through the primary of an induction coil, causes a rapid and regular series of sparks between the electrodes of a spark-gap included in the secondary circuit. These serve to illuminate the moving object while a concave mirror concentrates as much as possible of the light from the spark on the short-focus condensing lens. As the spark lasts less than one millionth of a second, the movement of the film is too insignificant to impair the distinctness of the image.—*Popular Mechanics*.

## Steel Smokeless Powder Will Not Corrode

A new quality of steel that resists both the corroding influence of smokeless powder and rust, has been manufactured in England and put through a series of the most severe tests.

Five thousand cartridges, containing 43.21 grains, troy, of smokeless powder, were fired through a rifle barrel made of it without showing any effect whatever on the steel. During the intervals between the firing, which covered a period of 50 days, the barrel was kept, uncleaned, in a damp cellar for the purpose of testing its resistance to rust. At the conclusion of the tests, there appeared to be nothing changed about the steel, inside the barrel or in its texture. In the course of internal-pressure tests, it was shown that the force required to burst the barrel was as high as 51 tons per square inch. The ultimate tensile strength of the steel was shown to be 63½ tons per square inch and the elastic limit 54 tons per square inch. Under these conditions, it would appear that the metal could be used with great success in the manufacture of pump shafts, valve spindles and seats, plug valves, check rings for valves and for a variety of other things where non-corrosive and rust-proof qualities are desirable.—*Popular Mechanics*.





# Answers to Correspondents

## RIFLE FOULING

EDITOR GUN DEPARTMENT: I own a Savage Model 1903, .22 caliber rifle, chambered for the short, long and long rifle cartridges. About five weeks ago, on cleaning the rifle after a hunting trip, I was surprised to find the barrel badly leaded. I had shot 9 or 10 U. M. C. long rifle smokeless cartridges and without cleaning changed to black powder shots, made by the Western Cartridge Company. Only shot a few of these. This is the first time I had used this make of cartridge. For some time before this I noticed a fouling in each corner of the riflings, which began at the chamber and followed the rifling for several inches. It seemed as hard as flint and I could not remove it with a common cleaning rod and rag and 3-in-1 oil. Will you please write me as to what you think caused the leading? Can it be removed without sending it to the gunsmith and if so, how? Are the cartridges made by the Western Cartridge Company good? I use long rifle cartridges entirely and always smokeless powder, until that unlucky day. I don't think it was due to negligence, as I have taken unusual good care of it, because I think it is the best rifle of that caliber made.

Is the Daniels Concentric Sight a good sight? Could a peep sight be used with it? What combination of sights would you recommend for my rifle? What are the best sights to use on the new Colt revolver, target model, .22 caliber? Yours truly,

RAYMOND FOSSENKEMPER.

[The trouble you have experienced by the fouling at the mouth of the chamber of your Savage .22 caliber is one that is liable to occur in any rifle chambered for three lengths of .22 caliber cartridges. The long and long rifle may be used continuously without fouling at the chamber, but when the .22 short is used, the minute shavings of lead cut from the bullet by the rear end of the lands, will gradually accumulate in the space between the short shell case and ends of lands. This mixed with burned residuum of the powder forms a deposit which gradually extends forward along the bore, usually beginning in the corner of the grooves. It grows harder and deeper with each succeeding shot and if not removed would soon fill the bore. The trouble is caused, as explained, and is not peculiar to any particular make of arm or ammunition. The only prevention is to watch the arm closely and wipe carefully at the first sign of trouble.

Should it become necessary to change from one kind of make of cartridge to another, I

would suggest that the bore be thoroughly cleaned before making the change. To remove lead from the barrel, use a Marble Brass rifle cleaner dipped in a good oil. Another method is to fill the bore with quick silver and let it stand 24 to 30 hours after which it will usually wipe out easily. If you cannot get a Marble brush readily, get a piece of brass wire gauze (strainer cloth), cut a narrow strip that will enter the bore outside of a thickness of cotton flannel over the knob on the end of your brass wiping rod, oil and work back and forth until the lead is removed.

It will not be necessary to send your rifle any where to have the lead removed. Your experience is but a chapter in the life of every rifleman and to be able to properly care for an arm is as essential and satisfying as to shoot one well. In the care of fire arms, as with most other things, and even to a greater degree. "An ounce of prevention is worth a pound of cure." It is not always convenient to carry a wiping rod when one is out for a little sport with a .22 caliber rifle or pistol, nor is it at all necessary. It is possible to fire thousands of shots in succession even with black powder cartridges without having recourse to the wiping rod. A good method is to examine the bore frequently and at the first sign of fouling, which will be easily seen, moisten the whole length of the bore with saliva and fire a shot through it while in that condition. It will be found that a single bullet will leave the barrel in good condition. Another good emergency scheme is to get about three feet of heavy braided brass picture hangers wire, drop a little soft solder on each end to keep it from raveling, then with a pointed tool like a carpenter's awl, separate the strands squarely in the middle an inch from one end and again twice more at intervals, leaving an inch between the openings. Into these openings through the braided wire insert oblong strips of cotton flannel thick enough to fit the bore snugly. To wipe the barrel, thread the plain end of the wire through from the muzzle and as it appears at the open breech, take a turn around the hand and draw through smartly with a single pull. This excellent pull through wiper is not liable to break off in the barrel, and when coiled up may be carried in one's vest pocket. The wiping rags should be passed through the braided wire at right angles to each other.

The Daniels Concentric Sight is one of the best and is especially adapted to the use of those whose eyes have lost the keenness of youth or the power of quick accommodation. It should not be used in combination with a peep sight. It would be impossible for me to recommend



any particular principle of sight for your use. Assuming that your vision is normal, an ivory or gold bead front sight with rear combination peep, or if you prefer, an open rear sight, the Daniels Concentric or King's 8 combination flat adjustable rear sight are fine to use with the ivory or gold bead front. There are no special sights on the market as yet that are adapted to the Colt .22 caliber revolver, but the repeated demands of the users of these excellent little weapons will doubtless soon bring them—  
R. A. K.]

### TO "FIX" .22 CARTRIDGES

EDITOR GUN DEPARTMENT: I have just entered my subscription to the Outer's Book after a three month's trial offer. It contains the most complete and instructive Gun and Ammunition Department of any magazine for sportsmen, and to say that I thoroughly enjoy every page is expressing my satisfaction mildly.

I have read E. R. B.'s inquiry and answer in the December number with interest, and would say that I have owned and used a Model 1890 .22 Winchester Rim Fire for more than three years, after experimenting with many other different makes, models and calibers. I find it powerful enough for any game in the New England States, such as grey squirrels, rabbits, partridge, quail, ducks, muskrats, foxes and raccoons.

The ammunition for this rifle is light, easy to carry, very clean and inexpensive. It is more powerful and is a better balanced load than the .22 long rifle. I would not recommend a .22 caliber rifle which is chambered for the short, long and long rifle, as the rifling cannot be adapted to all three loads without sacrificing the efficiency of either one or the other or all.

Are there any ammunition makers who make the .22 W. R. F. with a soft point bullet? Can you suggest any way of "fixing" the point so as to increase the shocking power? I think that if the Winchester people would manufacture them with the soft point it would double the sale of this most excellent little arm, and triple its efficiency, especially on foxes, raccoons and woodchucks which require quite a smashing blow to bag them neatly.

I have been using the regular factory sights. Do you think that I could get more pleasure from my rifle if equipped with Lyman sights? Are they the best all-around sights, that is, for small game hunting as above enumerated, including flying and running shots, also the occasional tin can thrown in the air by way of amusement? How does the Lyman 1A Combination Rear Sight compare with Marble's Flexible Rear Sights?

I have used my Model 1890 .22 W. R. F. mostly on the English sparrow and for target

work, also for small game and occasionally woodchucks. Would like to hear through your columns the experiences of others using this rifle. Very truly yours,  
R. C. B.

[I do not think the W. R. F. cartridge is made by any of the cartridge companies with the hollow point. I believe, however, that considering the comparative small number that one would use on game, it would be possible to prepare a quantity by boring out the points to about half the depth of the bullet and inserting a chilled shot that will press friction tight into the cavity.

The flat nose of the bullet is just the diameter of a No. 5 shot, or twelve one-hundredths of an inch. No. 4 is thirteen one-hundredths of an inch, and each succeeding size of chilled shot is one-hundredth of an inch larger. Shot ranging in size from No. 2 to No. 5 inclusive may be used. Sometimes these tiny bullets will expand beautifully by merely filling the hollow point with paraffine. A pellet of hard shot is better, as in a measure it restores the balance of the bullet.

Referring to the subject of sights, I would strongly recommend the rear combination peep sight, Lyman or Marble, for running or flying shots, or for any kind of shooting requiring a quick, accurate aim. For the front sight, try a small gold or ivory bead with a short neck so that the line of sight will be as close to the barrel as possible. An excellent and durable front sight may be made of the small dark steel sight regularly supplied on the Winchester .22 caliber rifles, by tipping it with gold, a dainty little job for some jeweler friend. I believe that a .22 caliber rifle equipped with sights as here described increases the effectiveness of both weapon and marksman fully 30 per cent. The optical principle of the Lyman and Marble sights being identical, a choice between them is merely a matter of individual preference.—  
R. A. K.]

### TO REDUCE RECOIL

EDITOR GUN DEPARTMENT: I have a Winchester .35 caliber Model 1895 and would like to get a good load with less recoil than the factory load. Would the .35 Remington wire wound or factory bullet be satisfactory? I tried Ideal gas check bullets No. 358318, with .35 grains of Lightning, but they scattered badly and I think they are too hard for game. If you can give me any pointers on this or any other that would be all right for deer and the kind and amount of powder, and oblige,

F. H. TOWNSEND.

[The only way in which you would materially reduce the recoil of your .35 caliber Winchester, Model 1895, would be to reduce the weight of